The RUBBER AGE

May, 1946

TECHNOLOGY DEPT.

New PRODUCTS

TELLURAC

Tellurium diethyl dithiocarbamate.
Accelerator for Butyl Rubber.

VanWax

Both clear and black for finishing and coating rubber goods.

VANSTAY

Stabilizer for vinyl chloride and copolymers.

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

Du Pont
NEWSLETTER No. 5, MAY 1946
RUBBER CHEMICALS DIVISION
PUBLISHED BY E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON 98, DELAWARE

ELA, A NEW ELASTOMER LUBRICATING AGENT

ELA, a pale yellow liquid, is a new product whose virtue as an elastomer processing aid lies in the fact that it reduces the tendency of stocks to stick to mill rolls without adversely affecting their cohesive strength and self tack. It is believed that its effectiveness is dependent upon a chemical rather than a physical action and thus it represents an entirely new type of rubber chemical. Extensive tests indicate that the material is non-toxic when used under normal conditions.

Methods of Use

Laboratory tests indicate that there are two general methods of using ELA:

1 Added to the stock.

2 Rubbed on the mill or calender roll.

The use of up to 2% of ELA does not affect either the curing rate or the aging characteristics of a basic neoprene stock. For butyl, we do not recommend the use of more than 1% of ELA.

When ELA is added to a stock it is most effective when introduced as close as possible to the point in the processing cycle where sticking occurs. When it is used in highly loaded stocks there is a tendency to lose effectiveness either on long milling or long storage of the uncured stock.

When factory experience indicates that the material be applied to the mill roll rather than the stock, it is suggested that a thin coat be applied to the roll by wiping with a rag moistened with ELA.

Plus Values from ELA

In addition to its primary purpose of preventing sticking to the rolls, laboratory tests indicate that the use of ELA has other advantages. Specifically these tests indicate that the use of ELA will:

1 Improve the surface appearance of the sheeted stock and help to prevent blistering or air checking.

2 Lead to the easy production of calendered sheets of uniform gauge particularly in the case of thin gauges from stocks which have a tendency to be sticky.

3 Widen the temperature range for successful calendering.

4 Speed up the conversion from a frictioning to a sheeting operation where a single calender is used for both purposes. It is suggested that ELA be applied directly to the middle roll for this purpose.

5 Function as a lubricant in extruding operations, facilitating the flow of the stock through the machine.

6 Assist in cleaning tubing machine heads and dies. For this purpose it is suggested that a small quantity of ELA be brushed over the inside surface of the head and die before the run is started.

●

For more information on ELA write for our Technical Bulletin BL-210.

DU PONT
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

THE RUBBER AGE, published monthly by The Palmerton Publishing Co., Inc., Printing Office, East Stroudsburg, Pa. Editorial and Advertising Offices at 250 West 57th Street, New York 19, N. Y. Entered as second class matter October 20, 1933, at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Subscription in United States, $3.00 a year; Canada, $3.50; foreign, $4.00. May, 1946. Vol. 59, No. 2.

The fire that got lost in a fog
TEN thousand blazing gallons of gasoline from a wrecked tank car brought under control in 14 minutes; completely extinguished in 40—thanks to a "Waterfog" hose nozzle that blankets the fire in man-made fog. Thanks are due, too, to the nozzle's valve seat, made from HYCAR.
The valve seat controls the flow of water to the nozzle, and any failure there means failure of the entire unit. The requirements are severe—not individually, but because a material to meet these requirements has to have certain properties in exactly the right combination.
High tensile strength and low compression set to prevent distortion of the HYCAR seat . . . abrasion resistance to withstand the rushing water at 150 psi pressure . . . permanent resilience to maintain a positive seal . . . non-adherence to metal to permit free operation of all the valve parts.
These properties plus the ones in the box at the right tell why HYCAR has become an important basic material in the aviation industry where HYCAR will continue to be widely used for grommets and seals; hydraulic and gasoline hose, diaphragms, and many other applications where dependability is essential. Ask your supplier for parts made from HYCAR. You'll learn it's wise to use HYCAR for long-time, dependable performance. HYCAR synthetic rubber is manufactured by B. F. Goodrich Chemical Company, Dept. HG-2, Rose Building, Cleveland 15, Ohio.
CHECK THESE SUPERIOR FEATURES OF HYCAR
1. EXTREME OIL RESISTANCE — assures long, dimensional stability of parts.
2. HIGH TEMPERATURE RESISTANCE—up to 250° F. dry heat; up to 300° F. hot oil.
3. ABRASION RESISTANCE—50% greater than natural rubber.
4. MINIMUM COLD FLOW — even at elevated temperatures.
5. LOW TEMPERATURE FLEXIBILITY — down to —65° F.
6. LIGHT WEIGHT—15% to 25% lighter than many other synthetic rubbers.
7. AGE RESISTANCE—exceptionally resistant to checking or cracking from oxidation.
8. HARDNESS RANGE—compounds can be varied from extremely soft to bone hard.
9. NON-ADHERENT TO METAL—compounds will not adhere to metals even after prolonged contact under pressure. (Metal adherence can be readily obtained when desired.)
Hycar
Reg. U. S. Pat. Off.
LARGEST PRIVATELY PRODUCED BUTADIENE TYPE
Synthetic Rubber
B. F. Goodrich Chemical Company
A DIVISION OF THE B. F. GOODRICH COMPANY
TO HELP YOU SELL

THIS HYCAR advertisement, appearing in a long list of business and trade publications, has just one purpose to accomplish — to make it easier for you to sell your customers parts made from HYCAR.

Like the ones which have come before and the ones which will follow, this advertisement tells HYCAR's properties and how they give long life and dependable performance to parts made from HYCAR.

And in closing the copy tells the reader "*Ask your supplier for parts made from HYCAR.*"

That's YOU.

And that's about as far as we can go. We offer the finest special-purpose synthetic rubber that can be had, the services of a highly trained research and development staff — plus strong advertising support.

It's up to you to take it from there and make the *profitable quality* sales that will keep you out of the competitive rut.

Reprints of all HYCAR advertisements may be had free for use by your salesmen. Just write Department HD-5, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

Hycar

Reg. U. S. Pat. Off.

LARGEST PRIVATELY PRODUCED BUTADIENE TYPE

Synthetic Rubber

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

IT'S A

DIFFICULT ACT...

but **PHILBLACK A** *won't let you down!*

When it's *high-HOT-tensile* you're after, just try using Philblack A with your GR-S. You'll be surprised to find that it gives much greater tensile strength at 200°F than you get with easy-processing channel black.

Compounding, production and sales departments all know that for economy of manufacture and good customer service—tires must maintain quality at elevated temperatures. And the result of Philblack A's assistance in creating these stellar roles are the encores, repeat orders and increased demand.

PHILLIPS PETROLEUM COMPANY

Philblack *Division*

EVANS SAVINGS AND LOAN BUILDING · AKRON, OHIO

GEON PRODUCTION IS BEING DOUBLED

● By early 1947 the production of GEON polyvinyl materials is planned to be more than double the rate of present production. This expansion is already under way—to make GEON available in desired quantities to old customers—to make possible the use of GEON by new customers who are now limited to experimental quantities.

This new production will, we hope, do away with the present need for allocations which, despite the end of the war and substantial production increases during 1945, we have been forced to resort to in order to make fair distribution of these increasingly important raw materials.

We hope you'll be pleased to know that, before too long, you'll be able to get GEON in greatly increased quantities. For help with development problems, please write Department K-5, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, O.

Geon
Polyvinyl Materials

B. F. Goodrich Chemical Company

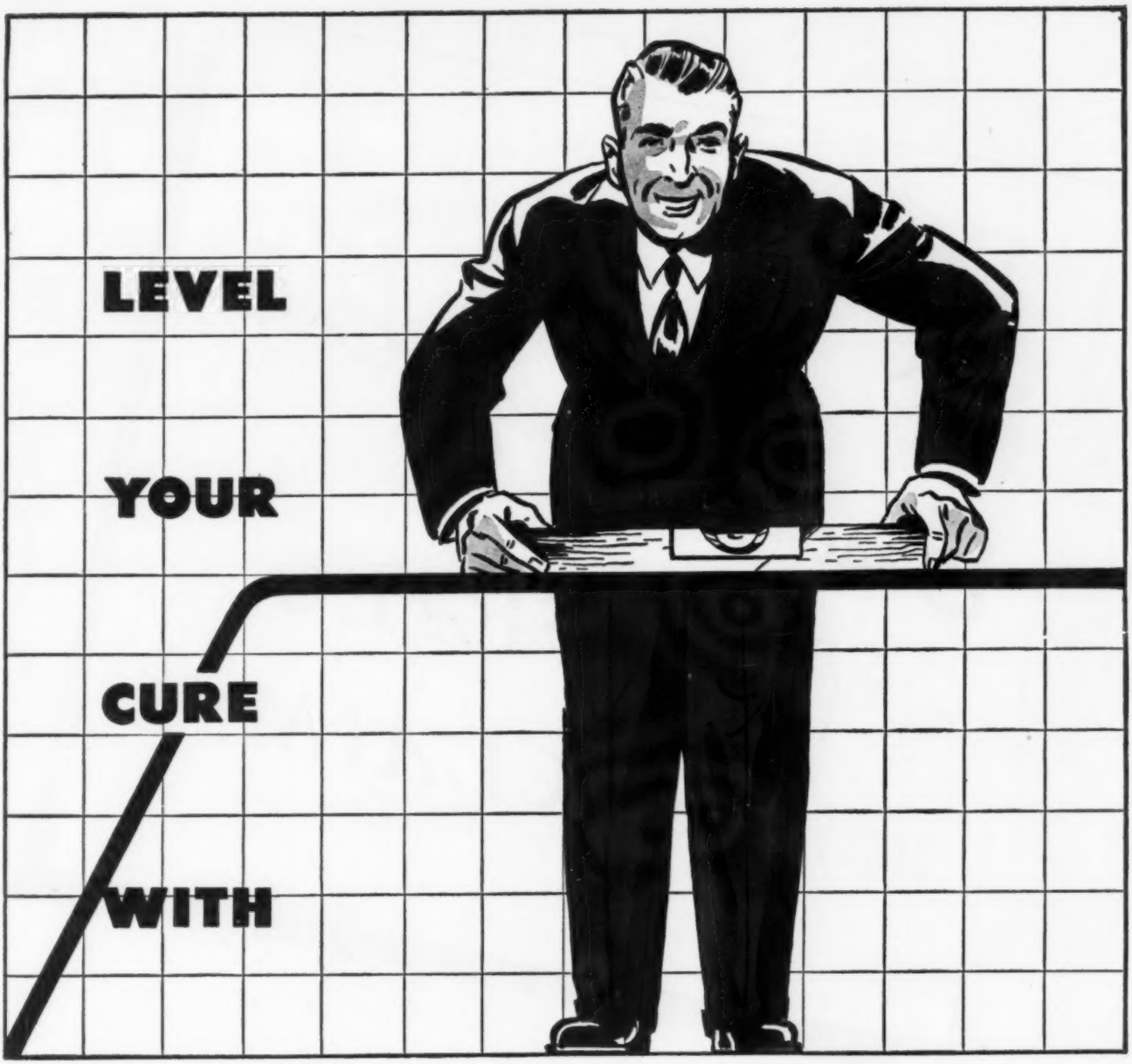
A DIVISION OF THE B. F. GOODRICH COMPANY

For technical data please write Dept. RB-5

B. F. Goodrich Chemical Company

A DIVISION OF
THE B. F. GOODRICH COMPANY

ROSE BUILDING, CLEVELAND 15, OHIO



BUNAC • • • Level the cure of your GR-S stocks by the straight addition of 2% to 4% BUNAC K-17. With BUNAC K-17 you obtain activation, better properties in the over-cured state, better aging, and improved cut growth resistance. Your technical bulletin on BUNAC K-17 is ready. Write for it.

WILMINGTON

CHEMICAL CORPORATION

10 EAST 40TH STREET • NEW YORK 16, N. Y.

PRESCRIPTION for ECONOMY!

Everyone agrees that economy and reliability are important considerations in selecting reclaims . . . that's why more and more leading manufacturers of rubber products are prescribing Buffalo Reclaims.

You'll be interested to know that behind BUFFALO RECLAIMS are 64 years of experience and research; BUFFALO subjects ALL its reclaims to rigid laboratory control . . . to assure you high-quality uniform grades.

We are happy to place our experience and technical advice at the service of the industry . . . we will give your reclaimed rubber problems our careful attention.

U. S. RUBBER RECLAIMING COMPANY, INC.

500 FIFTH AVENUE • NEW YORK 18, N. Y. • (Plant at Buffalo, N. Y.)

TRENTON . . . H. M. ROYAL, Inc., 689 Pennington Avenue • TORONTO . . . H. VAN DER LINDE, Ltd., 156 Yonge Street

64 Years Serving the Industry Solely as Reclaimers

Good news for rubber manufacturers—

CHEMIGUM N-3

the easy-processing synthetic rubber

IS NOW AVAILABLE

non-staining and non-discoloring

THIS new type of Chemigum N-3 makes Goodyear Chemigum more desirable than ever for many uses—opens new fields to its employment. Chemigum N-3 is more easily processed than other synthetics. It breaks down more uniformly — is heat stable — doesn't harden when mixed at high temperatures.

It also has good heat-aging characteristics, low solvent swell, low compression set and high oil-resistance. As a result many processing difficulties are eliminated by using Chemigum N-3, production time is saved and you get uniform quality in your finished products.

Chemigum N-3 can now be supplied in any quantity for volume production. Write for sample and processing data, specifying which type you want. Goodyear, Chemical Products Division, Plastics and Coatings Dept., Akron 16, Ohio.

Chemigum (pronounced Kem-e-gum)—T.M. The Goodyear T. & R. Co.

GOODYEAR

THE GREATEST NAME IN RUBBER

Essential!

GLYCERIZED

(LIQUID CONCENTRATE)

LUBRICANT

Yes GLYCERIZED *has proved to be an essential agent in modern day rubber processing!* . . . . . .

GLYCERIZED eliminates unhealthful and annoying 'dust' arising from the use of soapstone, talc, etc. Merely by dipping the slabs as they are cut from the mixing mill into a GLYCERIZED solution, all stickiness is done away with. Complete separation of piled stocks is assured. Adhesion is abolished! The cost is but a fraction of the former, old dusty method.

GLYCERIZED solution prevents sticking during cure of extrusions and tubing, when coiled on the flat pan or continuous running. Lubrication of molds, mandrels, air bags, belt drums, insulated wire and cable, etc. are all vastly facilitated by applications of GLYCERIZED solution.

Inner tubes, automotive parts and other molded and extruded goods are washed and finished readily with GLYCERIZED solution. It cleans thoroughly and lends that glossy, satiny finish so desirable in rubber products. Specific directions and proportions are furnished with each shipment.

GLYCERIZED is truly a versatile lubricant adapted to all types of synthetic rubbers as well as to natural rubber, reclaim or mixture thereof. During war and peace, GLYCERIZED LUBRICANT has served faithfully throughout the entire rubber industry. Many rubber concerns who won the Award for Excellence in War Production received consistent support in supplies of GLYCERIZED LUBRICANT which were at all times unfaltering.

GET THE GENUINE from GENSEKE

Yes GLYCERIZED *has well earned its place as the established lubricant in rubber processing* . . .

AVAILABLE IN DRUMS, HALF DRUMS AND QUARTER DRUMS

QUALITY SINCE 1884

GENSEKE BROTHERS

RUBBER MATERIALS DIVISION

West 48th Place and Whipple Street Chicago 32, U.S.A.

DEPENDABLE—
UNITED BLACKS

KOSMOBILE 77
DIXIEDENSED 77

EPC

United blacks, dependable for uniformity and performance, are the result of years of experience in carbon black making, centered in modern manufacturing plants and controlled with scientific precision. KOSMOBILE 77 and DIXIEDENSED 77—the standby EPC blacks during the war, now and in the future.

UNITED CARBON COMPANY, INC.

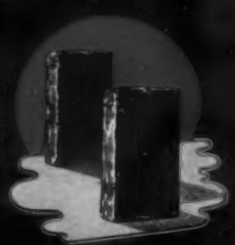
CHARLESTON 27, W. VA.

NEW YORK • AKRON • CHICAGO

Memorandum to—

Rubber Compounder

For perfection in reinforcement of GR-S there is nothing better than EPC black. For the perfect EPC black there is nothing superior to KOSMOBILE 77 and DIXIEDENSED 77. They are custom-made for GR-S and do equally well in other rubbers, synthetic or natural. KOSMOBILE 77 and DIXIEDENSED 77 are symbols for easy processing, cool mixing, high reinforcement and outstanding wear.



RESEARCH DIVISION

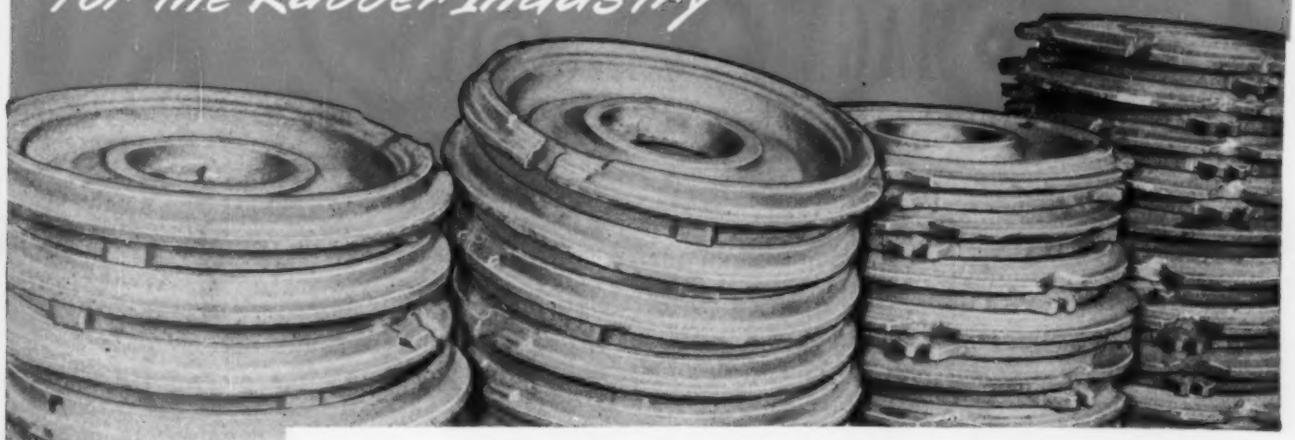
UNITED CARBON COMPANY, INC.

Charleston 27, West Virginia

UNITED

MANUFACTURES TIRE MOLDS

for the Rubber Industry



We can furnish tire molds of any type or size . . . to your exact specifications . . . in any quantity . . . promptly.

Our more than 30 years experience serving the rubber industry, and our unexcelled facilities for precision production, are guarantees of your complete satisfaction.

• • •

Why not let us estimate on your requirements. There is no obligation.

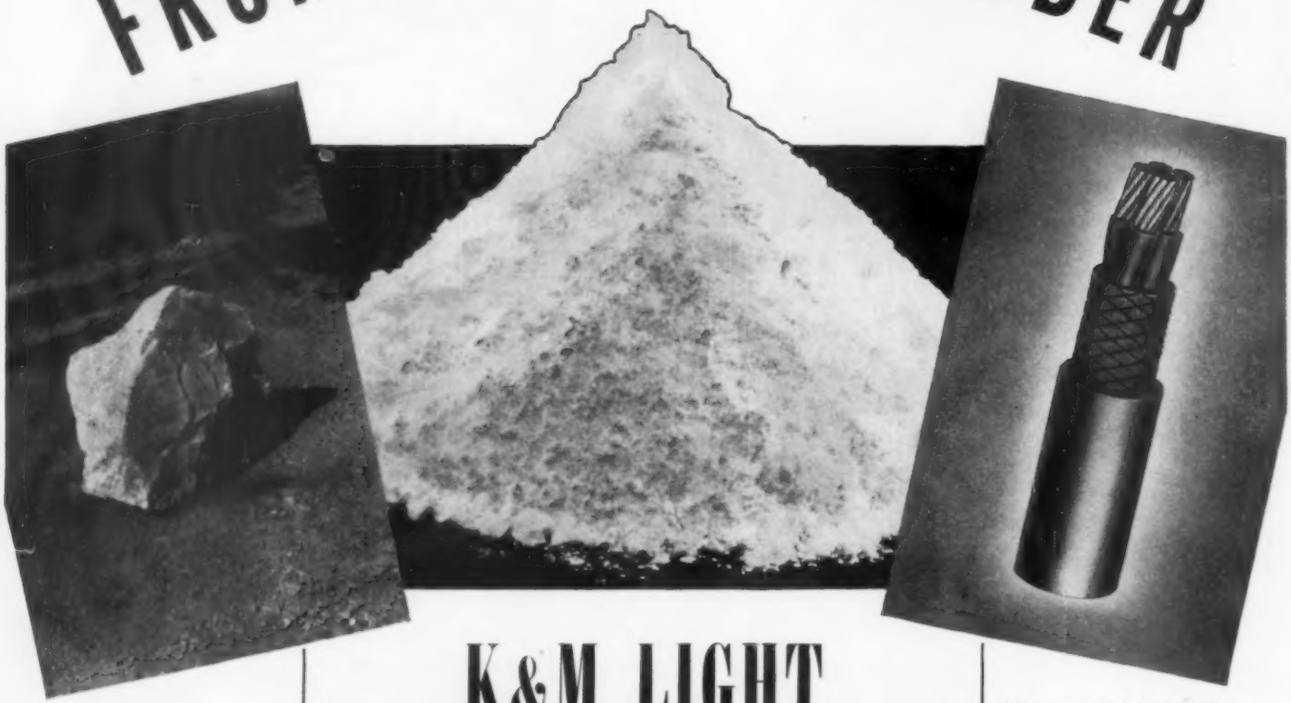
UNITED ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at Pittsburgh · Vandergrift · New Castle · Youngstown · Canton
Subsidiary: Adamson United Company, Akron, Ohio
Affiliates: Davy and United Engineering Company, Ltd., Sheffield, England
Dominion Engineering Works, Ltd., Montreal, P.Q. Canada

The World's Largest Designers and Makers of Rolls and Rolling Mill Equipment

FROM ROCK TO RUBBER



Dolomite Rock

Neoprene Jacketed Cable

K&M LIGHT MAGNESIUM OXIDE

• From hard, brittle rock to pliable rubber . . . not by alchemic magic, but by a long series of chemical and physical changes accurately controlled by K&M and by neoprene compounders!

From the crude Dolomite rock comes a featherweight powder . . . K&M Light Magnesium Oxide . . . an important element in the compounding of neoprene. Uniformly light and unvarying in quality, K&M Light Magnesium Oxide is manufactured by America's oldest and most experienced makers of magnesia products. Every stage of its processing is under rigid laboratory control, and *one* grade only is produced . . . the highest quality obtainable.

K&M Light Magnesium Oxide is available at stock points listed below.

K&M best in asbestos

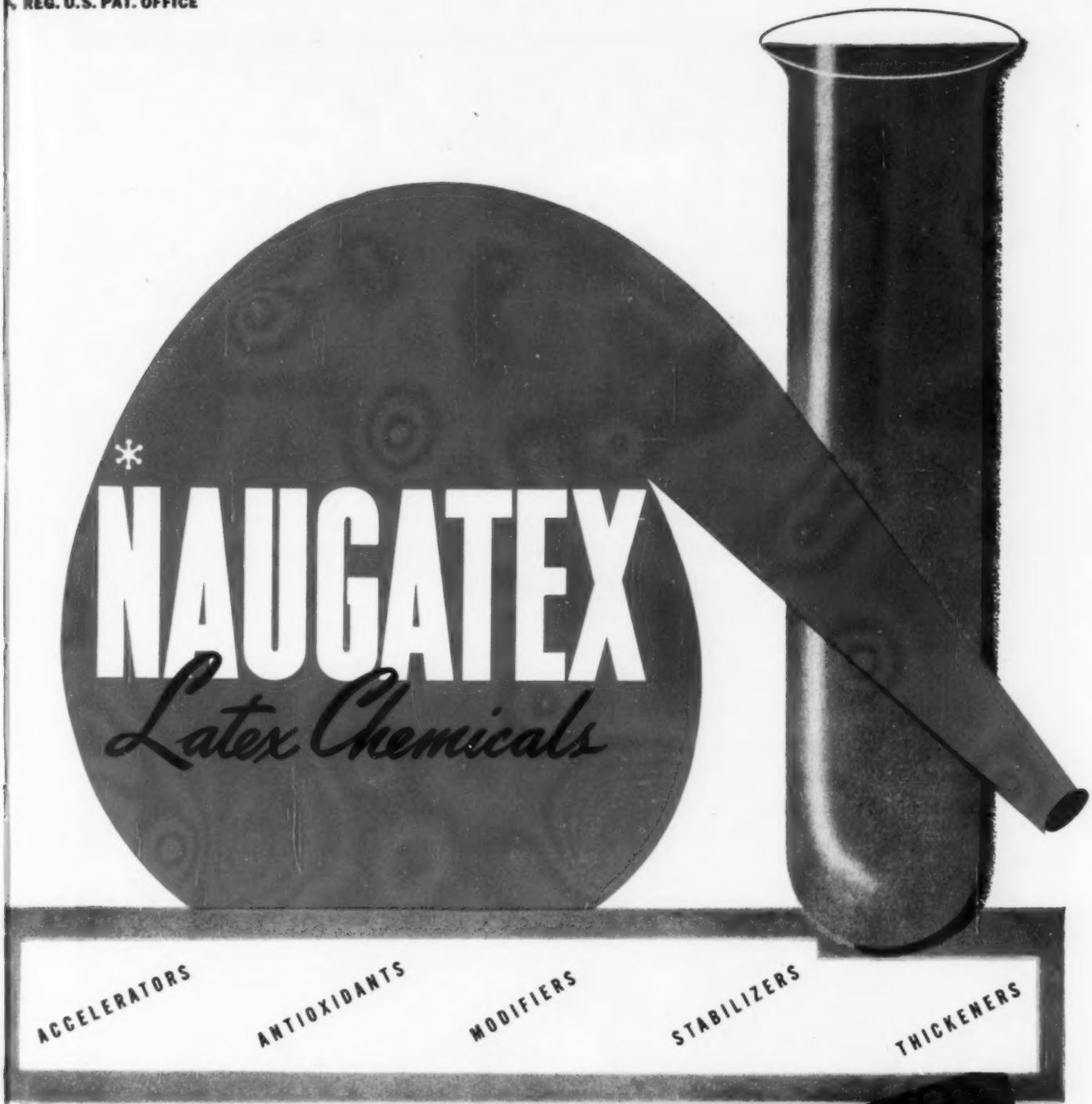
KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA
One of America's oldest and most reliable makers of asbestos and magnesia products — Founded 1873

OUR DISTRIBUTOR OF K&M LIGHT MAGNESIUM OXIDE IS:

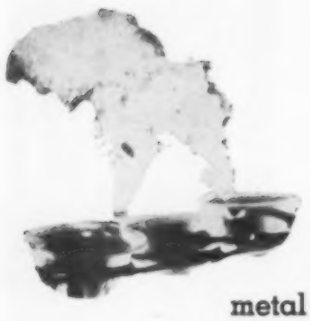
AMERICAN CYANAMID & CHEMICAL CORPORATION
30 Rockefeller Plaza, New York 20, N. Y.

WITH SALES REPRESENTATIVES TO THE RUBBER INDUSTRY AND STOCK POINTS:
AKRON, OHIO, Akron Chemical Company
BOSTON, MASS., Ernest Jacoby & Company
CHICAGO, ILLINOIS, Herron & Meyer
LOS ANGELES, CAL., H. M. Royal, Inc.
TRENTON, N. J., H. M. Royal, Inc.

* REG. U.S. PAT. OFFICE



NAUGATUCK CHEMICAL
Division of United States Rubber Company
1230 AVENUE OF THE AMERICAS · NEW YORK 20, N. Y. BRANCHES: AKRON · BOSTON · DETROIT · NAUGATUCK



Alchemist —

TWENTIETH-CENTURY VERSION

Unlike his distant cousin of the Middle Ages, this man is not trying to effect a transmutation of base metal into gold. He is, however, engaged at a task which consumers of zinc oxide will appreciate.

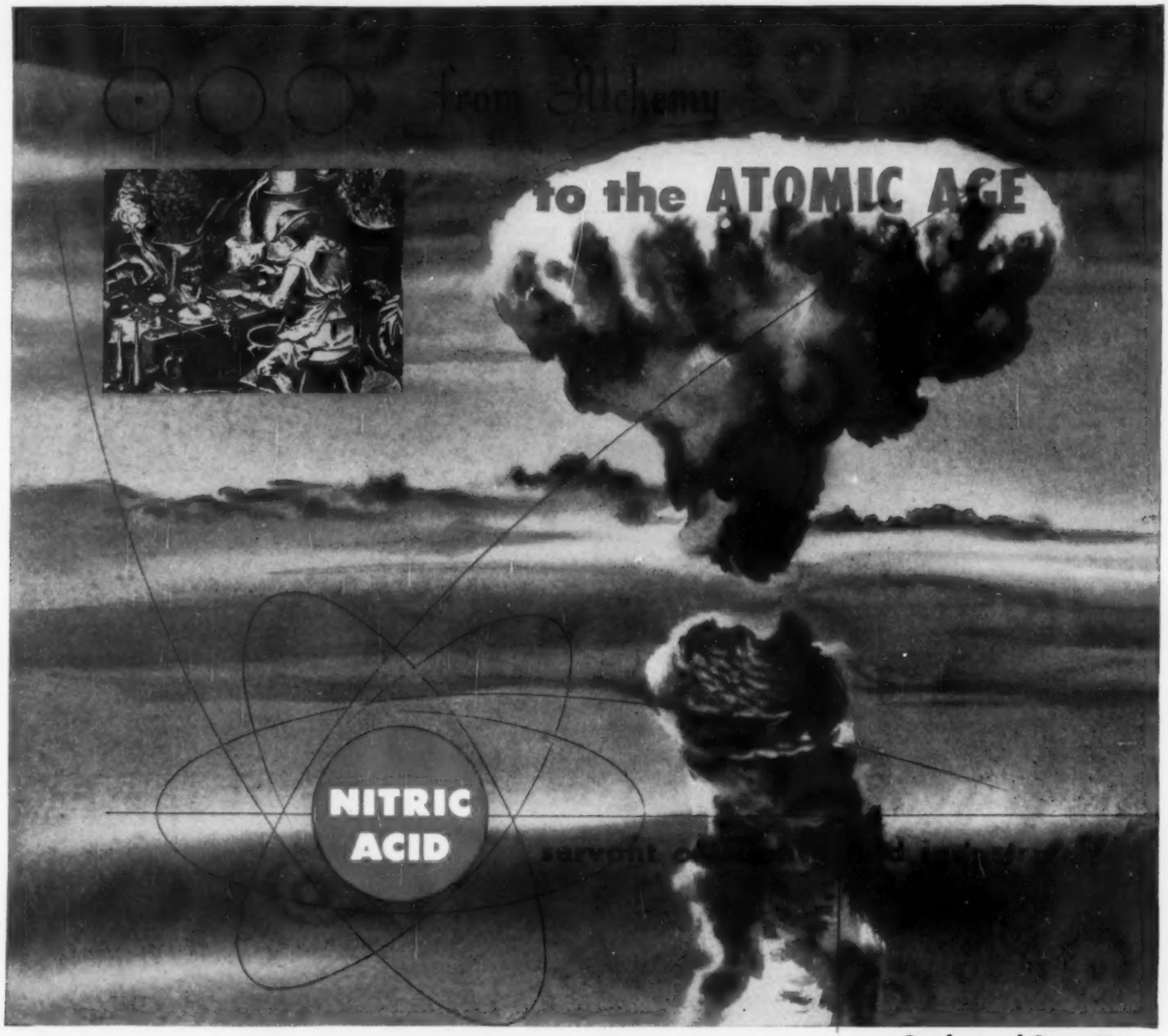
The picture shows a St. Joe metallurgist analyzing samples of zinc ore taken from the St. Joseph Lead Company's Balmat and Edwards mines in upper New York State. It is one of the many phases in the exercise of precise metallurgical control which actually begins underground at these mines, continues step-by-step through all milling operations and culminates in the laboratories of the Company's Josephtown, Pa., smelter. This unity of overall control in production, from ore to oxide, makes it possible to achieve an extraordinarily high degree of purity and uniformity in all grades of St. Joe lead-free Zinc Oxides—a factor which has made them famous throughout the consuming industries.

In the Balmat laboratory

ST. JOSEPH LEAD COMPANY
250 PARK AVENUE • NEW YORK 17
ELdorado 5-3200

ST. JOE *Lead-Free* ZINC OXIDE

MADE BY THE LARGEST PRODUCER OF LEAD IN THE UNITED STATES



NITRIC ACID . . . born in the reeking retorts of ancient alchemy . . . has been an invaluable tool of science and industry down through the ages. Even today, it still finds new, dramatic roles—such as in jet propulsion. Alone and as a component of mixed acid, this versatile product is irreplaceable for a host of applications ranging from explosives to engraving . . . from plastics to dyes. Scores of processes utilize its dual chemical characteristics as a strong acid and as a vigorous oxidizing agent.

GENERAL CHEMICAL HAS PROVIDED this basic chemical to American Industry for almost half a century . . . devoting continuous study to the product's properties and potentialities—and developing a wide range of grades and strengths for varying needs in production and laboratory.

• • •

IF YOU ARE A USER OF Nitric Acid, study the list at right. Here you will find a form of the product suitable for your requirements—always readily available from General Chemical's convenient plants and warehouses. Write or phone your nearest General Chemical Sales and Technical Service Office for full information.

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago • Cleveland Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis New York • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)
In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited
Montreal • Toronto • Vancouver

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

Grades and Strengths of General Chemical Nitric and Mixed Acids

Standard Grades
36° Be 38° Be 40° Be 42° Be

Diamond Grades
Highest Quality Commercial Acid
36° Be 38° Be 40° Be 42° Be
52.3%HNO_3, 56.5%HNO_3, 61.4%HNO_3, 67.2%HNO_3,
Approx. Approx. Approx. Approx.

Nitric Acid 95%
Diamond & Standard (48.5° Be)
Low in Impurities

Other Commercial Grades
including Aqua Fortis, also available

Reagent Grades
B&A Quality
C.P. Reagent A.C.S. Sp. Gr. 1.42
Fuming, Sp. Gr. 1.49-1.50, Reagent
Red, Fuming, Sp. Gr. 1.59-1.60, Reagent

MIXED ACID
Varying proportions of Nitric and Sulfuric Acids up to 100% total acidity to meet customers' requirements.

SILICONES

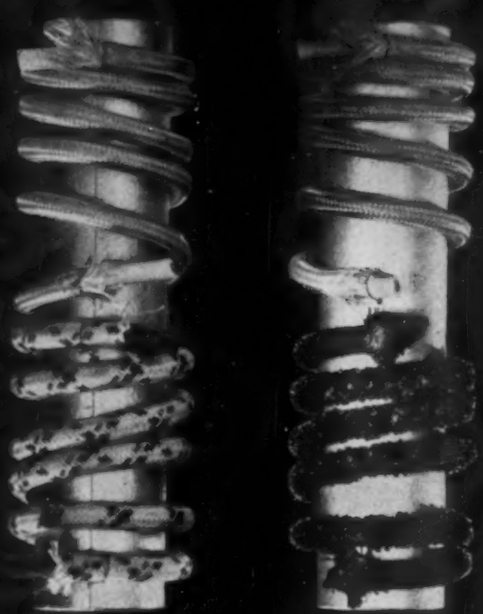
VARNISHES — *exclude moisture*

RESINS — *withstand heat*

GREASES — *insure lubrication*

SILASTIC

harness electricity



Silastic, the Dow Corning silicone rubber, is the only rubber-like insulating material that does not melt, harden, or crack from below –70° F. to above 500° F. Silastic insulated lead wire (top) shows no change after one hour at 500° F. Organic insulation (bottom) has softened and exuded freely through the braid.

Keeping electricity where it belongs—that's one big job DC Silicones do best! Expose DC Silicones to extreme heat and moisture—still they keep electricity harnessed, a tireless servant.

Take *SILASTIC,* the Dow Corning silicone rubber! It's useful in a wide variety of jobs no other material can do as well—insulating lead wires . . . imbedding transformers . . . enclosing heating elements . . . coating wire wound resistors and heat-resistant woven glass insulating tapes . . . fabricating heat resistant gaskets, seals, and diaphragms.

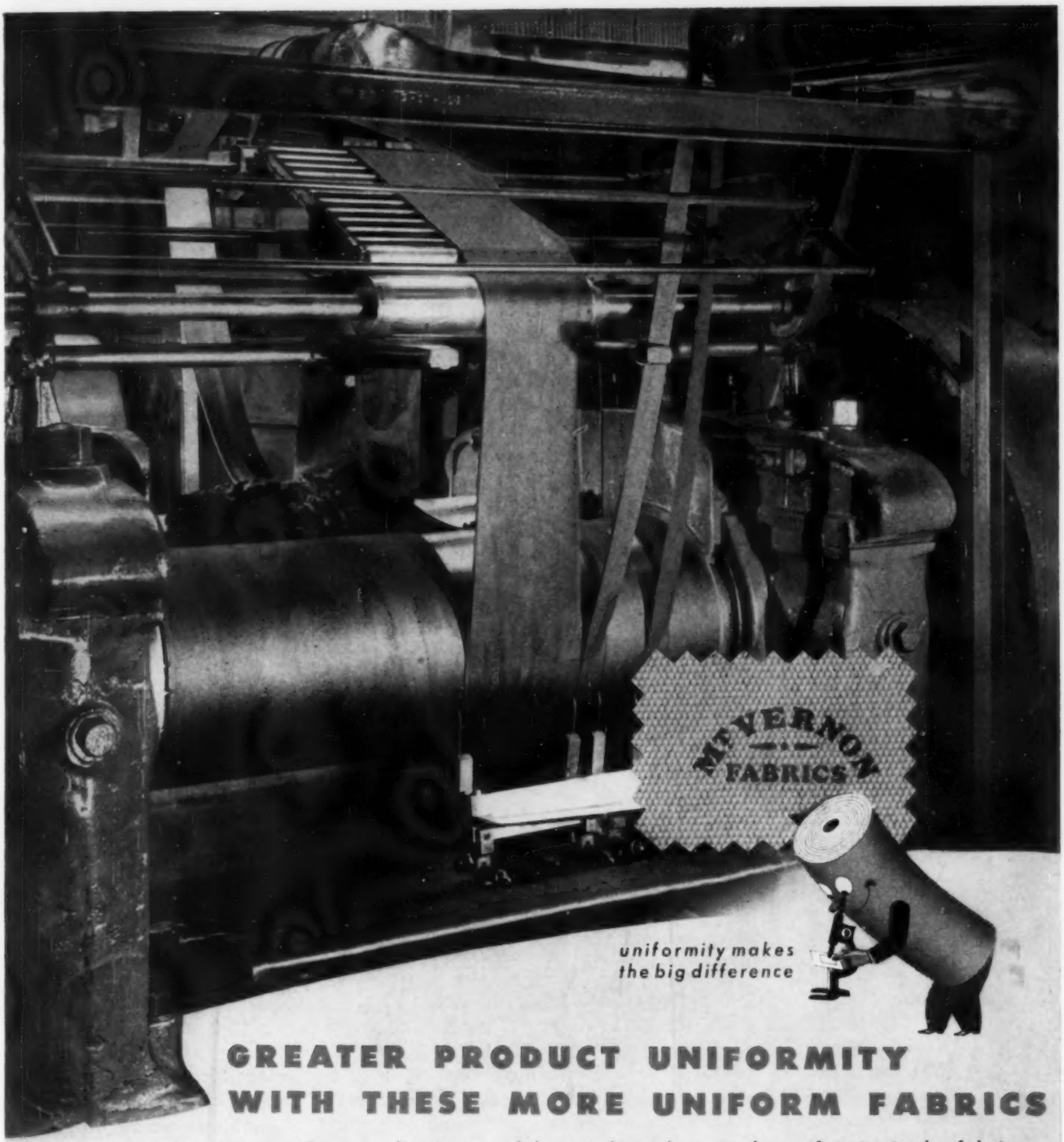
For further information on Silastic crepes for molding and extruding, or pastes for coating and laminating, ask Dow Corning for *SILASTIC FACTS.*

DOW CORNING CORPORATION
MIDLAND, MICHIGAN

Chicago Office: Builders' Building • Cleveland Office: Terminal Tower
New York Office: Empire State Building
In Canada: Dow Corning Products Distributed by Fiberglas Canada, Ltd., Toronto

Dow Corning

FIRST IN SILICONES



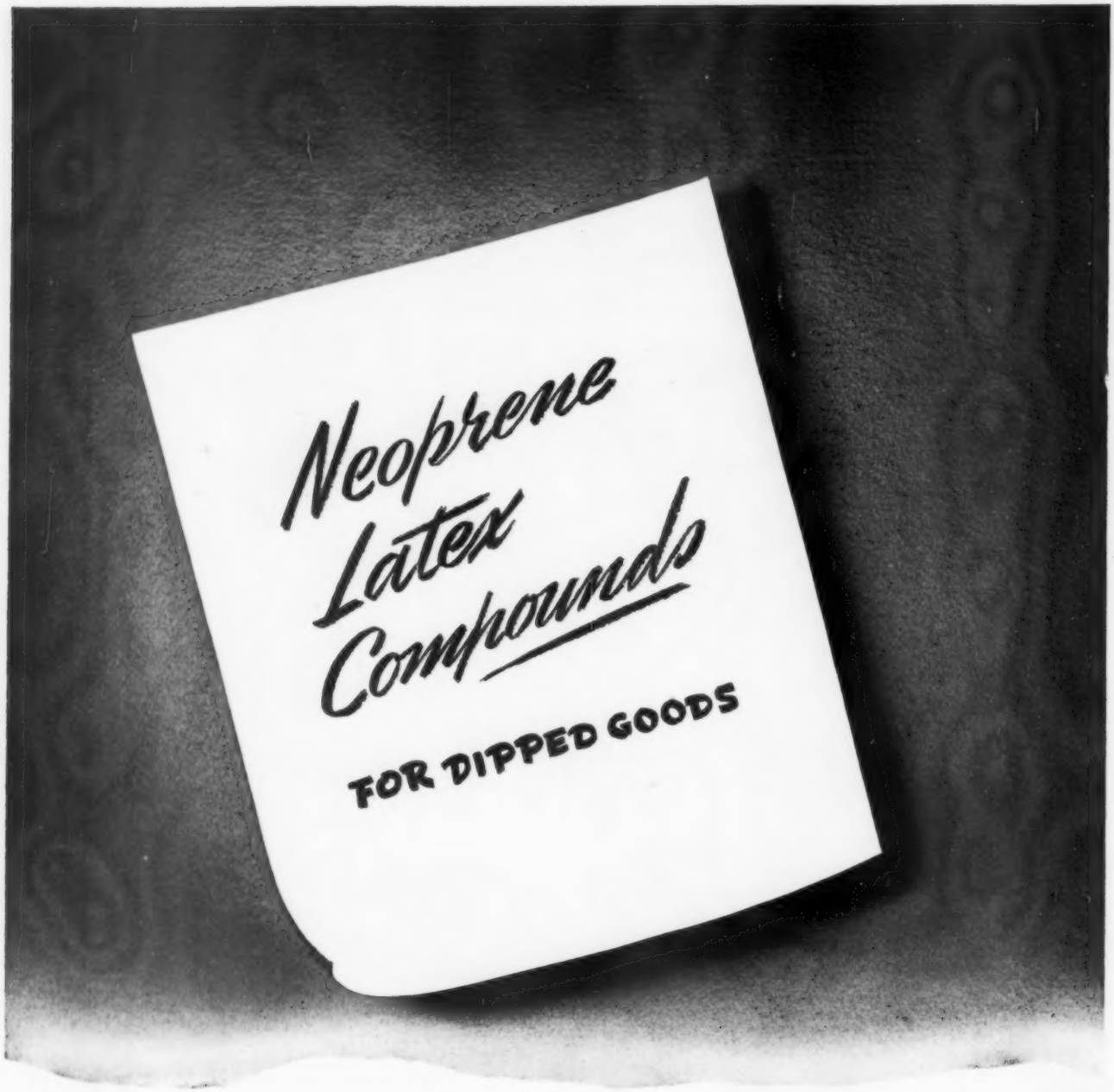
GREATER PRODUCT UNIFORMITY WITH THESE MORE UNIFORM FABRICS

You get only as uniform quality in your fabricated products as the uniformity in the fabric you use allows. To assure a consistently higher quality of product, plus stepped-up production, specify MT. VERNON fabrics. Checked throughout their production to assure a more uniform weave, they give you uniform penetration, resiliency and flexibility—'must' qualities in more uniform rubber fabrication.

MT. VERNON-WOODBERRY MILLS

TURNER HALSEY
COMPANY
Selling Agents
40 WORTH ST. • NEW YORK

Branch Offices: **CHICAGO • NEW ORLEANS • ATLANTA • BALTIMORE • BOSTON • LOS ANGELES • SAN FRANCISCO**



General Latex has developed several simplified neoprene latex compounds for dipped goods. These compounds are thoroughly "tried and proven" and in current use in many factories. Neoprene latex offers advantages not found in natural rubber latex—more particularly, high resistance to oxidation, sunlight, oils, and chemicals. If you are considering the manufacture of any dipped product, we suggest that you get in touch with our technical staff. Their years of experience with natural and neoprene latex will prove very helpful in formulating a neoprene compound custom-made to your specific needs.

General Latex
& CHEMICAL CORP.
666 MAIN STREET, CAMBRIDGE, MASS.

Vultex Division — Verdun Industrial Buildings, Verdun, Montreal, Quebec

Agents for Rubber Reserve Company for storage and distribution of natural rubber latex. Distributors for Rubber Reserve Company for synthetic latex. Operators of the Government owned Baytown, Texas, synthetic rubber plant in collaboration with the General Tire & Rubber Co

it's your move to Color...

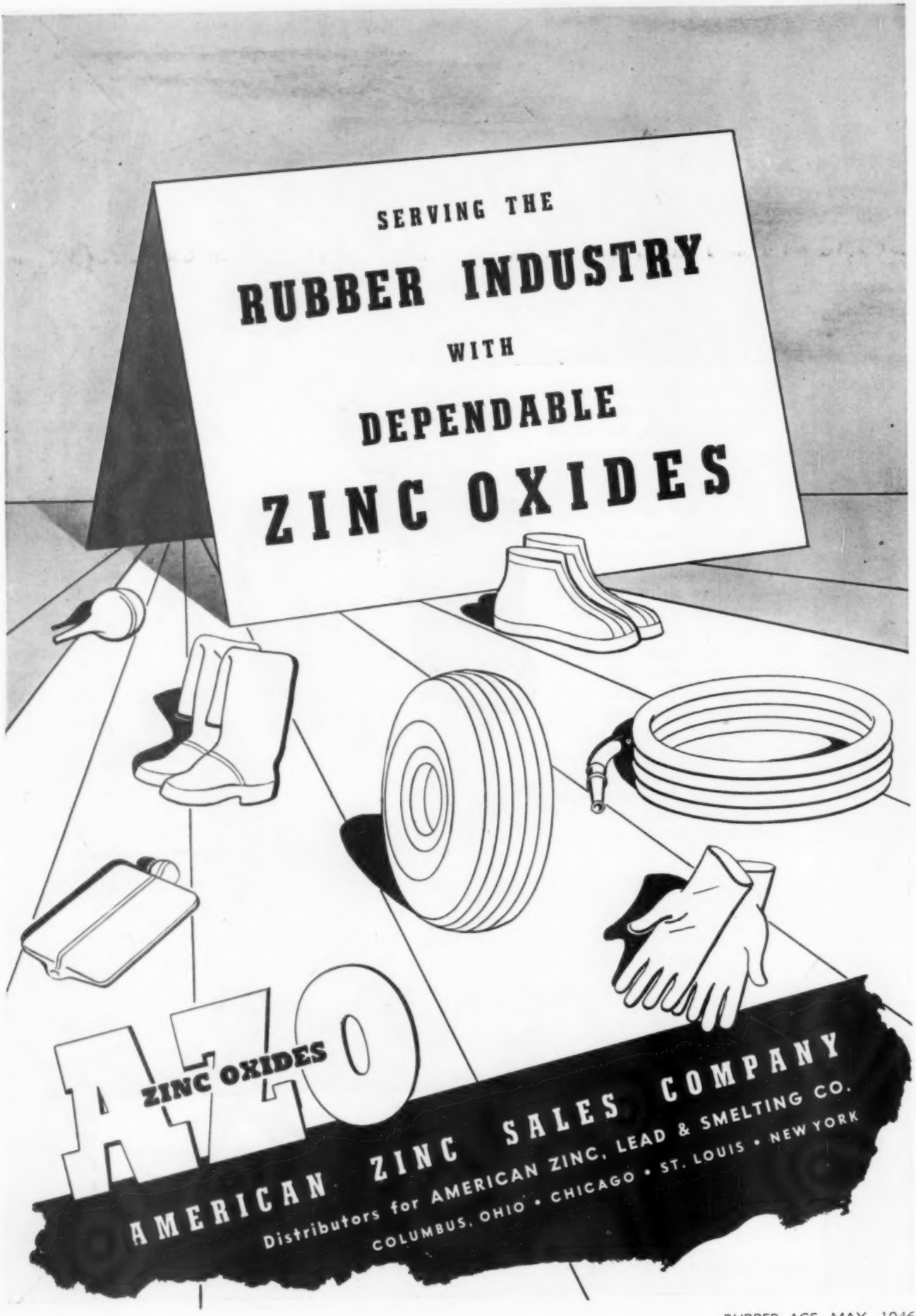
THE RETURN of red tubes from war-time oblivion is setting the pattern for *moves to color* in many directions... In Drug Sundries, Mechanical Goods, and Footwear, COLOR will stimulate the change to stable peace-time markets . . . The return of white side-wall tires is a looming event for 1946 . . . In all of these production trends SILENE EF is a dominant factor because it is assuring greater success in color compounding . . . SILENE EF is essential in many non-black compounds of natural or synthetic rubber to give them the needed processing and good cured physical properties unobtainable when whitings or clays are used alone as the loading pigment.

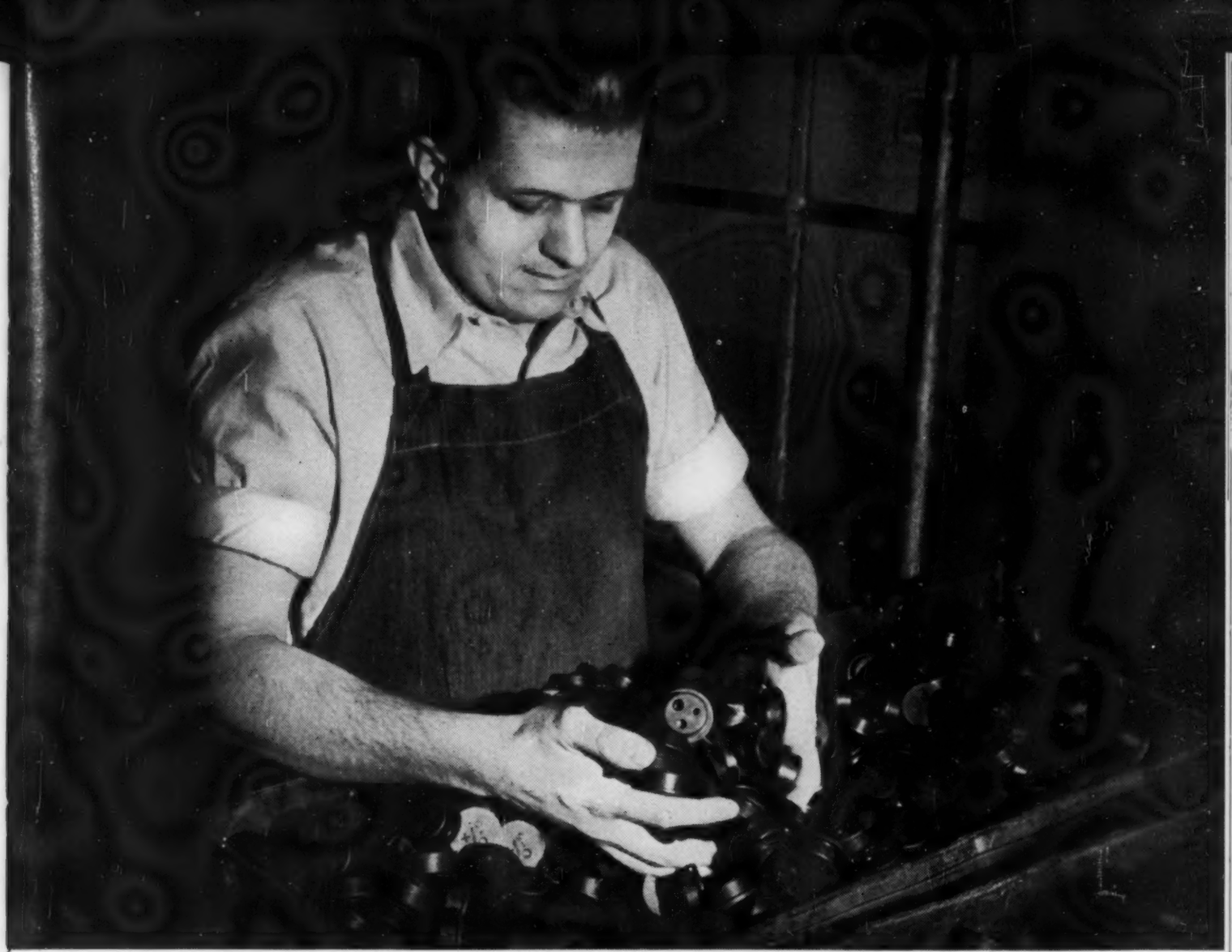
SILENE EF

STANDARD Chemical Company

General Offices: AKRON 8, OHIO

New England: 335 Chamber of Commerce Bldg., Boston, Mass.
Mid-Atlantic: Broad Street Bank Bldg., Trenton, N. J.
Mid-West: 2724 W. Lawrence Ave., Chicago, Ill.
Pacific Coast: 1248 Wholesale St., Los Angeles, Cal.


SERVING THE
RUBBER INDUSTRY
WITH
DEPENDABLE
ZINC OXIDES
AZO
ZINC OXIDES
AMERICAN ZINC SALES COMPANY
Distributors for AMERICAN ZINC, LEAD & SMELTING CO.
COLUMBUS, OHIO • CHICAGO • ST. LOUIS • NEW YORK



A SURE *Stopper* FOR BLOOMING TROUBLES

SUN PROCESSING OIL...

Reduces Amount of Natural Rubber and GR-S, Used by Eastern Manufacturer

An eastern rubber processor was using an ordinary petroleum product to process GR-S and natural rubber. Stocks were difficult to handle and he was troubled with surface bloom.

A Sun Engineer was called in and recommended one of the special processing aids, refined by Sun for the rubber industry.

A saving of 10% in natural rubber and Buna-S content of certain rubber products was made possible . . . blooming stopped. The Sun product also resulted in effective softening of the vulcanizate. Excessive use of softener was not required and loss in tensile strength was avoided.

For faster processing . . . for elimination of blooming, bleeding, cracking . . . for increase in resilience, tensile strength and other properties . . . call in the Sun man near you today.

SUN OIL COMPANY • ***Philadelphia 3, Pa.***

Sponsors of the Sunoco News-Voice of the Air—Lowell Thomas

SUN

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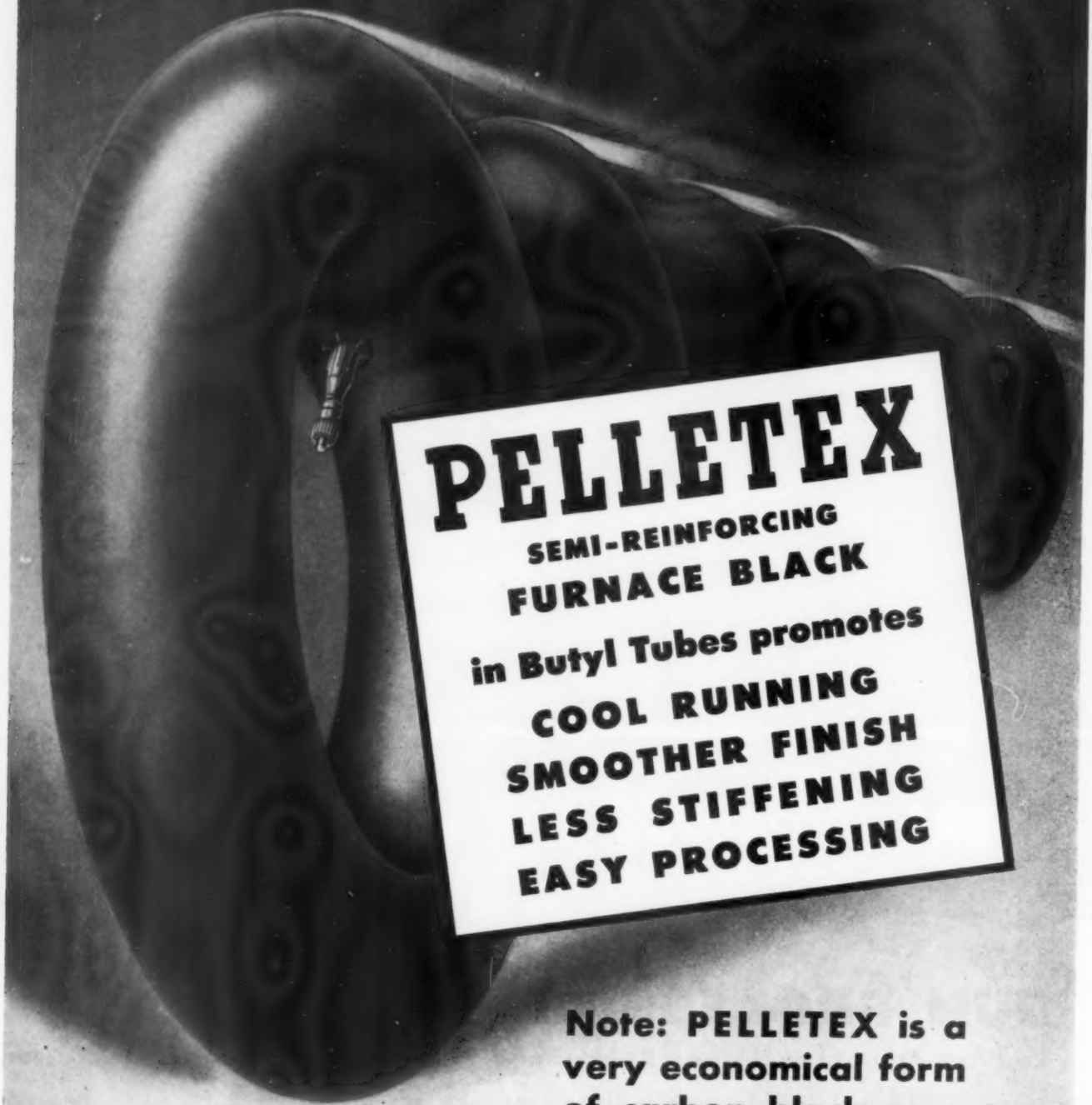
INDUSTRIAL PRODUCTS

BUTYL TUBES ARE HERE TO STAY!



PELLETEX

SEMI-REINFORCING
FURNACE BLACK

in Butyl Tubes promotes

COOL RUNNING
SMOOTHER FINISH
LESS STIFFENING
EASY PROCESSING

Note: PELLETEX is a very economical form of carbon black — —

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GENERAL ATLAS CARBON CO.
PELLETEX
CASTEX
PAMPA, TEXAS · GUYMON, OKLA.

HERRON BROS. and MEYER
NEW YORK, N.Y. AKRON, OHIO
RUBBER
H AND M
PIGMENTS Chemicals

rayon *defies* the fire in a tire

makes tires SAFER-BETTER

Greater safety, longer life and superior performance, whether the tires are made of natural rubber, synthetic rubber or combinations of both—that's rayon's contribution to tire-making.

Scientists know that tires heat up as they roll and that this heat shortens tire life, causes blowouts and road failure. Rayon "defies the fire" in two ways: first, a lighter tire always runs cooler—and rayon, being stronger, makes a lighter tire possible; second, rayon maintains higher tensile strength as it gets hotter.

Bus and truck fleet owners provide the practical proof of these laboratory findings. They report that rayon cord tires give longer life, greater mileage and reduce road failures and blowouts.

So much for rayon in general. In particular, Industrial Rayon makes Tyron rayon yarn, cord and fabric. In addition to the advantages found in all rayon, Tyron also provides unequalled uniformity, thanks to the extra controls resulting from Industrial's exclusive Continuous Process.

TYRON rayon for tires

Made by INDUSTRIAL RAYON CORPORATION
Cleveland, Ohio

Saskatchewan or Timbuktu

Schrader Products Make Tires Last Longer

A CATALOG OF A COMPLETE TIRE SERVICE

If you have not received your copy of Schrader Catalog No. 48-A, write today to Box No. 240, General Post Office, Brooklyn 1, N. Y.

Schrader Products are standard the world over. They are versatile in application on the various types of tubes, rims, wheels and vehicles with which they will be used.

Compared to the cost of the tires, the cost of Schrader protection is so small you can't afford to be without it. Yes, Schrader Products control the air..."make tires last longer."

Whether it's tire parts or tire service equipment, look to Schrader, STANDARD THE WORLD OVER.

A. SCHRADER'S SON • BROOKLYN 17, NEW YORK

Division of Scovill Manufacturing Company, Inc.

ORIGINATORS OF THE COMPARATIVE AIR LOSS SYSTEM FOR FLAT TIRE PREVENTION

Schrader
PRODUCTS CONTROL THE AIR

INVESTIGATE
Sharples VULTACS

IN GR-S OR GR-S-NATURAL RUBBER TIRE TREADS

FOR IMPROVEMENT OF:

- RESISTANCE TO FLEX-CRACK GROWTH...
- RESISTANCE TO TEAR...
- RETENTION OF ORIGINAL PROPERTIES AFTER AGING...

Further information will be gladly supplied upon request.

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SHARPLES CHEMICALS INC. PHILADELPHIA • CHICAGO • NEW YORK

FROM THE CATALOG OF BARRETT

RUBBER COMPOUNDING MATERIALS...

B.R.V.*

B.R.V. is the highest boiling of any of the liquid softeners produced by Barrett from coal-tar oil for the rubber industry.

Specific Gravity	1.14 to 1.18 at 25°C/25°C
Specific Viscosity, Engler, 50 ml. at 50°C	5.0 to 10.0
Insoluble in Benzene, % by weight	0.5 maximum
Water, % by volume	0.5 maximum
Distillation, % by weight	
To 300°C	7.0 maximum
To 315°C	3.0 to 12.0
To 355°C	28.0 maximum

B.R.V. is particularly recommended for use in

GR-S — Reclaiming

GR-A

Availability

Tank cars and 50-55 gallon non-returnable steel barrels

*Reg. U. S. Pat. Off.

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The C. P. Hall Co.
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The ultimate in GLAZED CLOTH

to meet all requirements for all types of rubber sheeting, must

have superior surface gloss

• • •

be of uniform caliper and tightly filled

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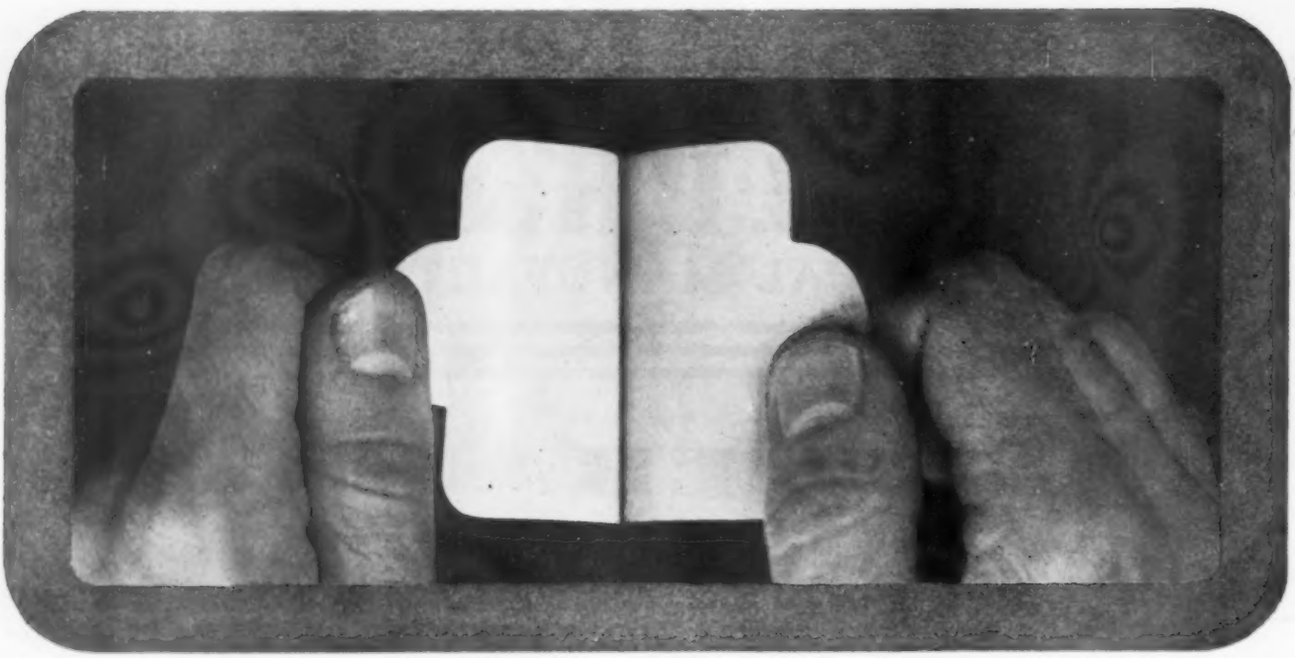
carry minimum surface load

• • •

be non-flaking and pliable



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BRATEX
RUBBER HOLLAND

It is available in 3 qualities and in 3 widths — 20" — 30" — 40" in 100 and 250 yard rolls or in special size rolls on order.

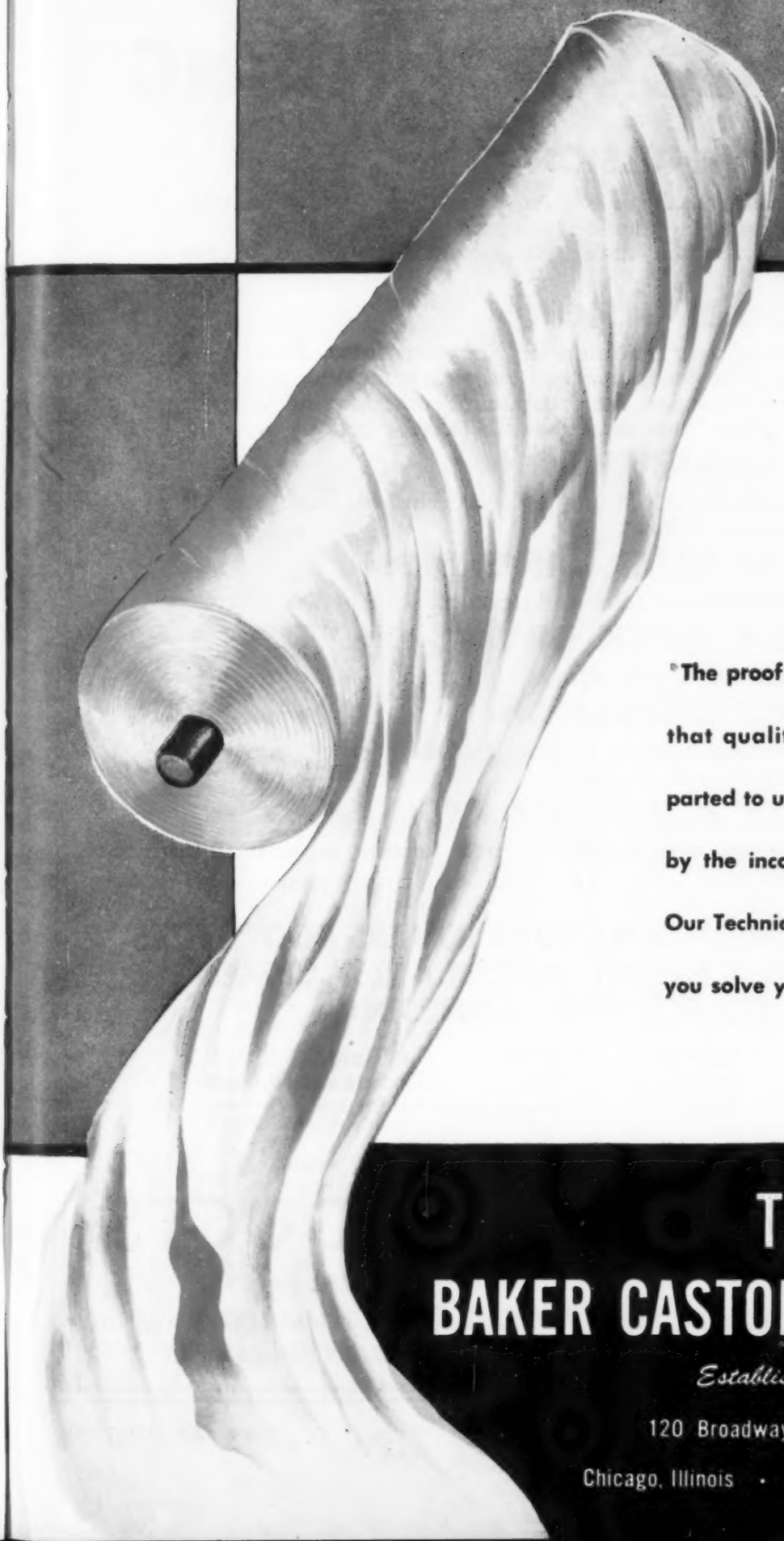
Write for Samples and Prices.

THE HOLLISTON MILLS, INC.

Processors of Cloths for Special Purposes

Dept. B1 Norwood, Massachusetts

. . . the proof of the Plasticizer is in the DRAPE*



*The proof of the plasticizer is in the DRAPE— that quality of hang, softness, "hand", imparted to unsupported films and coated fabrics by the incorporation of BAKER PLASTICIZERS. Our Technical Service Staff will be glad to help you solve your plasticizer problems.

THE BAKER CASTOR OIL COMPANY

Established 1857

120 Broadway, New York, N. Y.

Chicago, Illinois • Los Angeles, California

FOR
LATEX COMPOUNDING

- **NO. 1954 EMULSION**

  A combination emulsion and tackifier which when used with Latex (synthetic or natural) produces latex cements with excellent tack retention and improved tensile strength.

- **NO. 1956 EMULSION**

  A three way emulsion for Neoprene latex. Acts as an acid acceptor in addition to being a tackifier and Neoprene extender. An exceptional compounding base for Neoprene latex cements.

- **NO. 1737 DISPERSION**

  A combination curing dispersion and acid acceptor for Neoprene latex.

- **NO. 1740 FILLER DISPERSION**

  A combination filler and stabilizer for all types of latex.

- **NO. 1754 QUICK DRYING DISPERSION**

  Speeds up drying of latex compounds.

- **NO. 1760 DISPERSION**

  For compounding latex to adhere to non-porous surfaces such as plastic.

- **NO. 1917 A. P. FOAM REDUCER**

  Prevents latex compounds from foaming when used in machines.

• WE ALSO MANUFACTURE OVER 400 TYPES OF RUBBER CEMENT AND LATEX CEMENT —SUITABLE FOR ADHESING—

• Plastic	• Rubber	• Metal	• Tinfoil
• Leather	• Fabric	• Cork	• Sponge Rubber
• Wood	• Glass	• Leatherette	• Paper

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NEW YORK RUBBER DIVISION
(ESTABLISHED 1895)

CORPORATION

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Her eyes have to make the first move . . .

IF HER HANDS ARE TO REACH FOR YOUR PRODUCT

IN TODAY'S OPEN DISPLAYS, "eye power" in a package really counts—and *Coated* Lithwite cartons do have eye power. That's why you'll find so many leading products in *Coated* Lithwite cartons. Famous *Coated* Lithwite paperboard is smooth, velvety. Its chalk-free surface is a perfect base for printing inks. Reproduces pictures with true-to-life realism.

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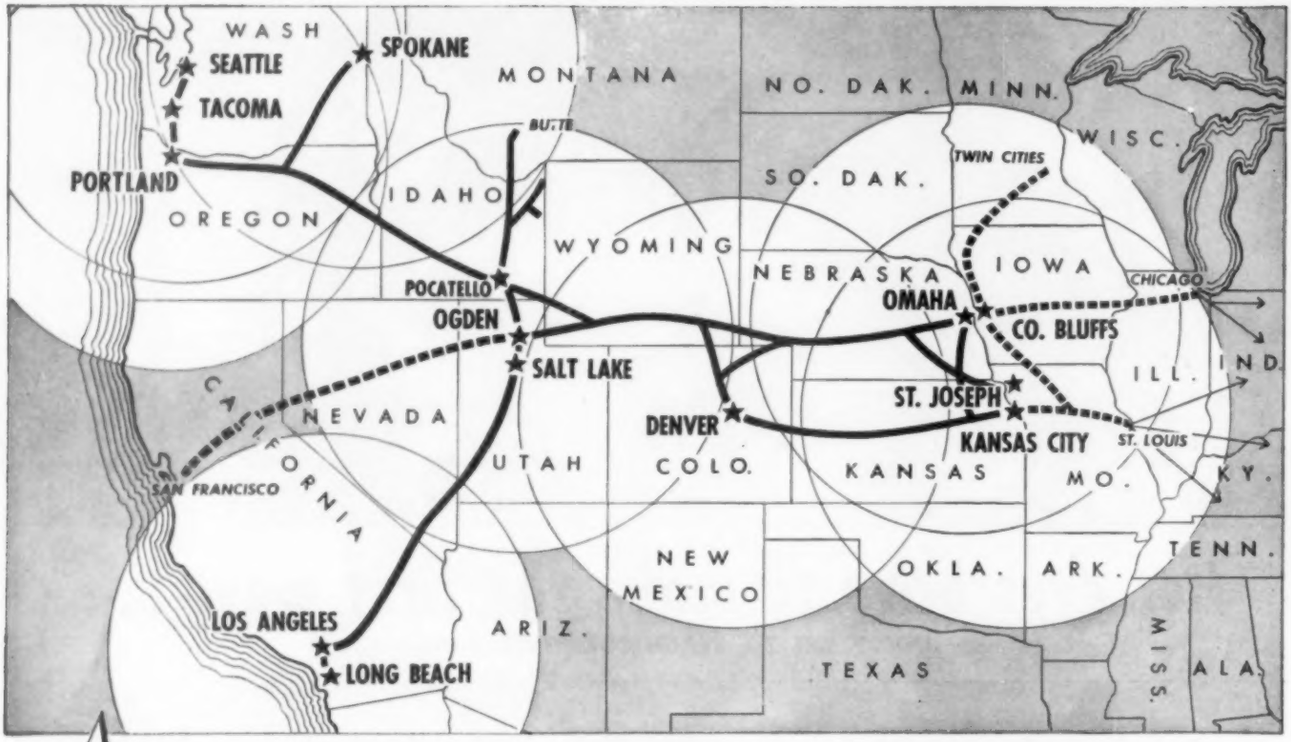


Opportunity for Industry

The western territory served by Union Pacific is rich in countless raw materials required by industry; has power and other necessary facilities; has a high type of native-born labor. Here lies the opportunity for industry to build and expand.

Among the principal industrial tracts owned or served by Union Pacific are those located in, or near by, the following cities:

Omaha, Neb.	Ogden, Utah
Council Bluffs, Iowa	Portland, Oregon
St. Joseph, Mo.	Seattle, Wash.
Kansas City, Mo.-Kans.	Tacoma, Wash.
(Fairfax District)	Spokane, Wash.
Denver, Colo.	Los Angeles, Cal.
Salt Lake City, Utah	Long Beach, Cal.

As the map shows, all these cities are located on the main lines of the Union Pacific Railroad.

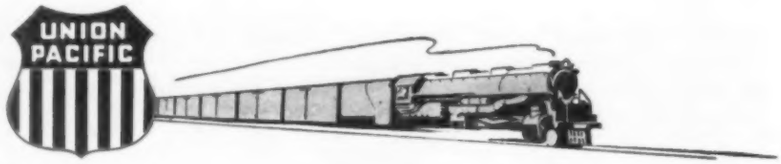
The circles on the map indicate 500-mile distribution areas. In normal times, Union Pacific operates a fast, merchandise freight (L. C. L.) service within these short-haul areas, with door-to-door pick up and delivery service.

These industrial properties are improved and occupied by many diversified manufacturing and commercial enterprises.

Necessary utilities are available and each tract is served by adequate industrial trackage. Whenever required, additional trackage can be provided.

You are cordially invited to write W. H. HULSIZER, General Manager of Properties, Union Pacific Railroad, Omaha 2, Nebraska, regarding industrial districts in territory served by Union Pacific.

be Specific – say "Union Pacific"



The Progressive

UNION PACIFIC RAILROAD

The Strategic Middle Route

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Perbunan is not a "scattershot" rubber!

Perbunan is an *engineering material controlled* carefully, *tested* strenuously. A material which fits the *specific service* demanded by a *definite* industry.

The two Perbunan compounds shown illustrate Perbunan's adaptability to the automotive field. These compounds, specifically made for automotive engineers, illustrate how an engineered material can be versatile, meeting the requirements of many other industries.

We've advertised these compound applications to the automotive industry. Take advantage of our automotive trade advertising, and of Perbunan quality, economy and versatility.

Stanco rubber technologists are ready to help with your tough problems. Don't hesitate to get in touch with the nearest Stanco Distributors Office.

COMPOUND NUMBER	8975-8	8975-9
Perbunan 26	85.0	85.0
GR-S	15.0	15.0
Zinc Oxide	5.0	5.0
Stearic Acid	0.5	0.5
S. R. F. Black	75.0	75.0
Santocure	3.0	3.0
Tetramethylthiuram Disulfide	3.0	3.0
Paraplex G-25	10.0	
Durez Resin 12687		10.0
Original Physical Properties Cured 60 minutes at 287 F		
Shore Hardness	52	67
Tensile psi	2310	2740
Elongation per cent	480	320
Modulus at 300 per cent Elongation psi	1540	2690
Compression Set 30 per cent Constant Deflection		
70 hrs at 212 F	16	33
70 hrs at 250 F	26	46
Ovenaged 70 hrs at 212 F		
Shore Hardness points change	+7	+3
Tensile psi	2520	2740
Elongation per cent	360	230
Aged ASTM Test Oil Number One — 70 hrs at 300 F		
Shore Hardness points change	+6	+1
Volume Increase per cent	+5	+6
Tensile psi	1690	2330
Elongation per cent	360	220
Aged ASTM Test Oil Number Three — 70 hrs at 300 F		
Shore Hardness points change	−10	−10
Volume Increase per cent	+48	+57
Tensile psi	1340	740
Elongation per cent	260	140
Low Temperature Properties		
ASTM Bend Test D736-43T O. K. at	−70F	−70F

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REG. U. S. PAT. OFF.

THE SYNTHETIC RUBBER THAT RESISTS OIL, COLD, HEAT AND TIME

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ORDER OUT OF *Chaos*

✔ That was the result when, early in this century, we promoted systematic grading and specifications for

SCRAP RUBBER

✔ WE ARE STILL MAINTAINING

Leadership Through Ability and Stability

H. MUEHLSTEIN & CO. INC.

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LOS ANGELES: 1431 E. 16 St. • MEMPHIS: 46 W. Virginia Ave. • CHICAGO: 327 So. La Salle St. • AKRON: 250 Jewett St. • BOSTON: 31 St. James Ave.

Sterling-S

High resilience and high loading capacity in tire beads are but two of the qualities of Cabot Sterling S (SRF). Another is low heat generation in carcass stocks and tubes. These outstanding characteristics of Sterling S are maintained rigidly by the world's largest manufacturer of Furnace Blacks. Cabot control assures uniformity.

SRF

(SEMI-REINFORCING FURNACE BLACK)

CABOT

GODFREY L. CABOT, INC. 77 FRANKLIN STREET BOSTON 10, MASS.

For Cooler-Running Tires...
Compound GR-S-10 *with* RED LEAD

Here's how you can take full advantage of GR-S-10, the new rubber with improved tack for your tires.

Use #2 RM Red Lead in combination with thiazole and thiuram accelerators. The result is a safer, cooler running tire of improved heat stability. In addition the #2 RM Red Lead assures a practical rate of cure and an extended curing range.

It is effective, efficient and economical.

Two formulas are shown. The accompanying data indicate how the addition of #2 RM Red Lead in Formula "B" helps produce cooler-running, safer tires... tires that last longer, and whose superior balance of original properties is well maintained throughout their service life.

Further information will be supplied upon request to the Rubber Division of our Research Laboratories, 105 York Street, Brooklyn, N. Y.

COMPOUND GR-S-10 WITH RED LEAD FOR THESE 6 GOOD REASONS:

1. **Improved Heat Stability —retention of elasticity**
2. **Lower Heat Build-up — Cooler Running**
3. **Faster Curing Rate**
4. **Extended Curing Range**
5. **Excellent General Physical Properties**
6. **Safe Processing**

FORMULAS

GR-S-10 TREAD STOCK

	"A"	"B"
GR-S-10	100	100
EPC Black	45	45
Zinc Oxide	3.0	3.0
#2 RM Red Lead	—	2.25
Santocure	1.80	—
Thiofide	—	0.65
Thionex	—	0.25
Sulfur	2.00	1.40
Disproportionated Wood Rosin	—	5
Coal Tar Softener	8	3

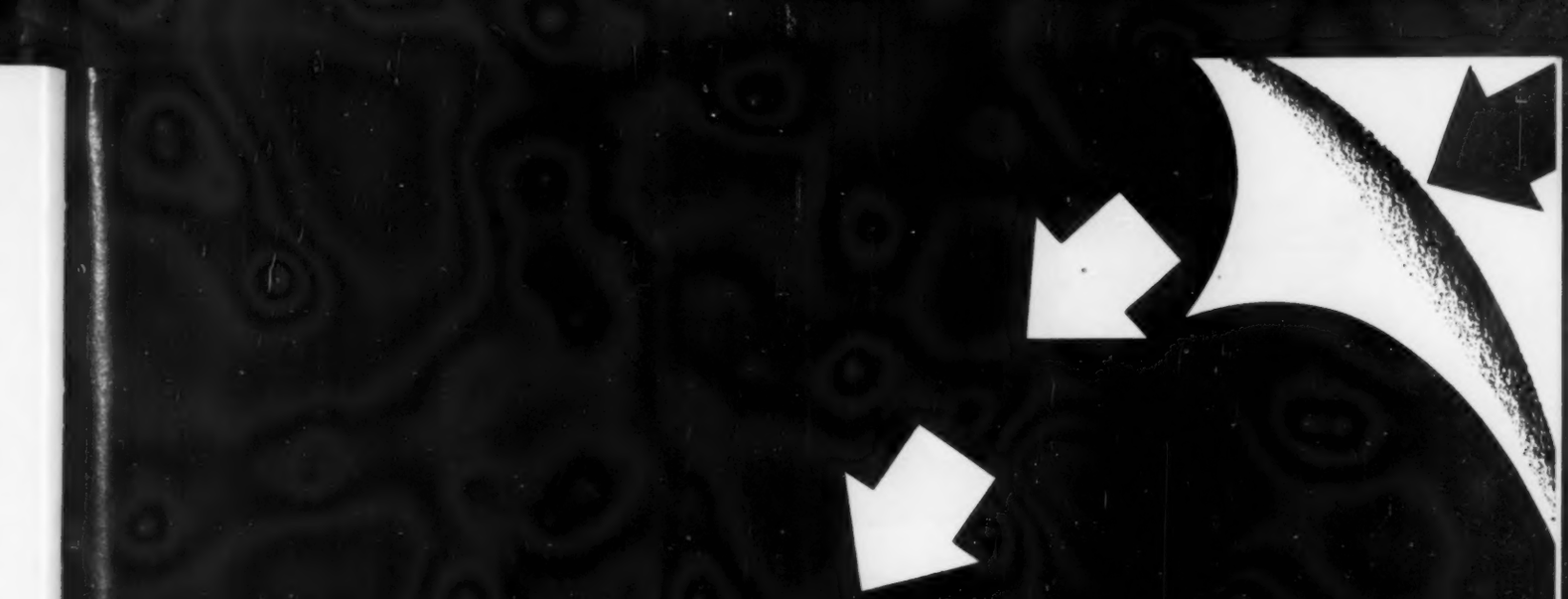
DATA

Sample	*T/287°F*	*Tensile Strength*	*% Elong.*	*M-300*	*M-500*	*Shore*	*△ T, F°[1]*
A	15	no cure					
	20	270	890	0	80	40	
	30	2490	710	600	1500	51	
	45	3000	635	800	1990	55	66.5
	60	2600	580	875	2200	56	64.0
	90	2500	570	920	2140	56	64.0
B	15	2600	870	240	915	50	
	20	2980	790	415	1290	52	
	30	3170	680	710	1800	56	
	45	3110	630	885	2215	57	63.0
	60	3170	630	880	2190	57	60.5
	90	3000	585	930	2350	57	60.5
		Aged 48 Hr. at 100°C					
A	15	no cure					
	20	insufficient cure					
	30	1600	240	....	....	69	
	45	2060	335	1980	....	68	
	60	2000	340	1700	....	67	
	90	2200	370	1685	....	67	
B	15	2520	395	1730	....	66	
	20	2800	475	1550	....	65	
	30	2725	465	1620	....	65	
	45	2700	450	1660	....	65	
	60	2780	450	1660	....	65	
	90	2620	430	1530	....		

[1] *Goodrich Flexometer at 20°C, Load 100 psi, Stroke, 20%*

NATIONAL LEAD COMPANY

New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.).



"...HIGH ABRASION RESISTANCE"

WITCO CHANNEL BLACKS

Witco Channel Blacks impart definite and distinctive properties to synthetic and natural rubber formulations. For instance, Witco Black #12 is an easy processing channel black which imparts to synthetic or natural rubber higher than average resistance to abrasion, important in the manufacture of tires and rubber goods subjected to constant hard usage. Very little is sacrificed in other properties to secure this added wear factor. Witco Black #1, a medium processing channel black, imparts to rubber equally good performance characteristics, especially in its long-sustained and efficient resistance to abrasion.

WITCO CHEMICAL COMPANY

MANUFACTURERS AND EXPORTERS

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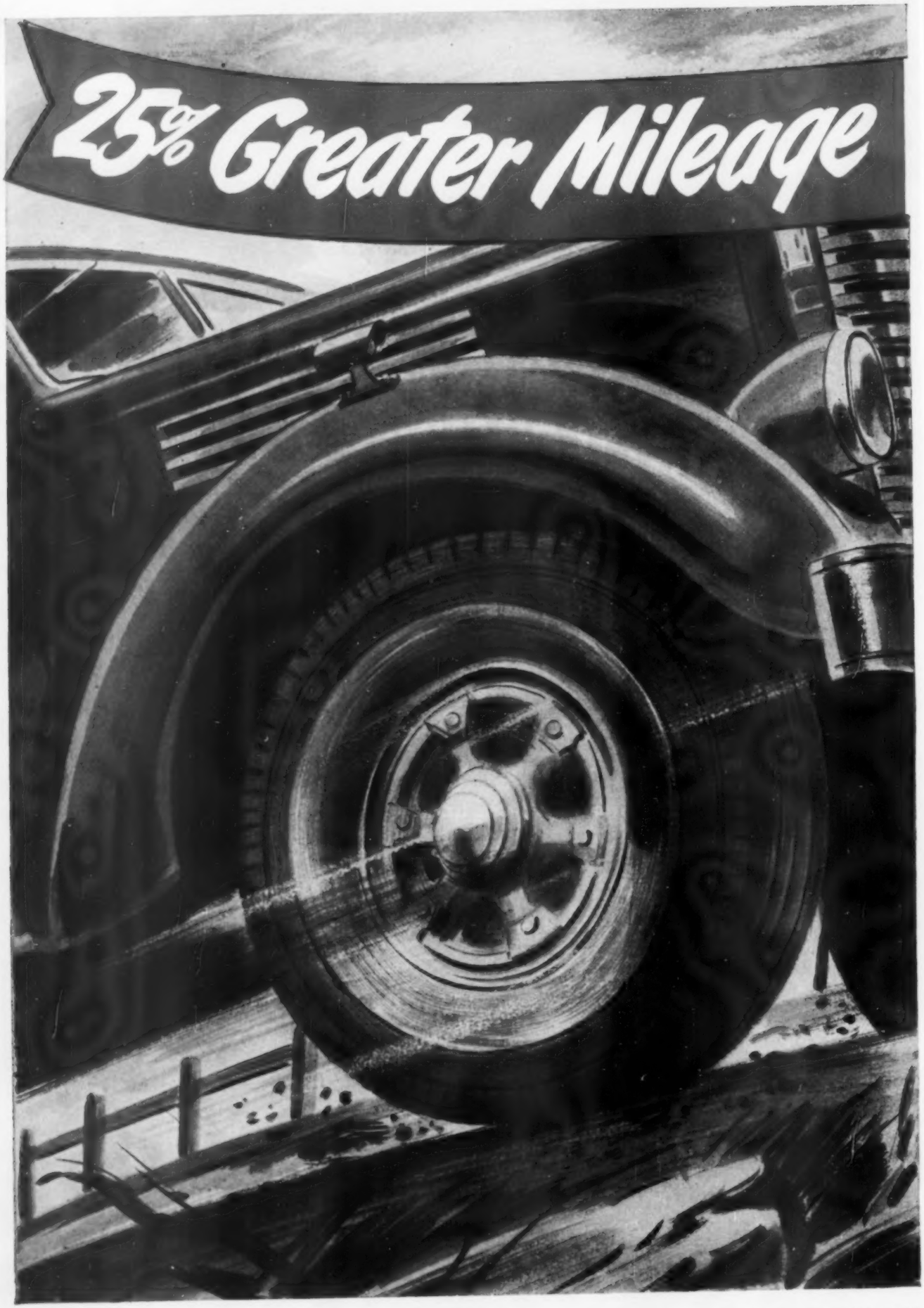
25% Greater Mileage

with Rayon Cord

Charles E. Williams, *Superintendent of Equipment*, King Farms Company, Morrisville, Pa., maintains over 100 vehicles at this large farm. He reports:

"We find rayon cord gives us 25 per cent greater mileage in operating our fleet over a million miles a year. Our experience with rayon over a period of six years has also shown increased safety with heavy loads, and better recapability."

HERE ARE THE REASONS WHY

Science shows that rayon's molecular structure and physical uniformity, combined with its greater strength, permit a cooler running tire. At the same time, rayon retains its tensile strength better when running temperatures get high. This means fewer blowouts, bruises, cuts . . . principal tire maintenance problems. But it particularly means better mileage . . . and better condition of carcasses for recapping. No wonder so many bus and truck companies everywhere report fewer road delays with rayon . . . and higher speeds with greater loads more safely hauled.

AMERICAN VISCOSE CORPORATION

America's largest producer of rayon

Offices: 350 Fifth Avenue, New York 1; Charlotte; Cleveland; Philadelphia; Providence; Washington; Wilmington.

Our free booklet, "The Record of Rayon in Tires," gives dozens of interesting facts about rayon cord that make clear its importance in tires of today and tomorrow. Order your copy now. Just clip and fill in the coupon.

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350 Fifth Avenue, New York 1, N. Y.

Gentlemen:

Please forward a copy of "The Record of Rayon in Tires."

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*Firm*_____

*Street*_____

*City*_____ *State*_____

GIVING you WHAT you want is only part of Whittaker's service. Through an extensive distribution system, Whittaker products are available *where* they are most needed... and *when*.

Today, as essential materials are released for general use — and demand for them is heaviest — Whittaker is among the first to offer them for sale. The first talcs to leave India, Italy and France for commercial use after the war's close, for instance, were Whittaker imports. If a product is available at all, it is Whittaker's unswerving endeavor to have it first... and in the widest variety of desirable grades.

Whittaker has ten well-informed agents, fourteen plants and well stocked warehouses, strategically located to serve all the United States and southeastern Canada.

Call on Whittaker for prompt attention to your wants. Order commercial quantities with full assurance of getting materials of controlled quality and uniformity — or write, at any time, for technical data, laboratory samples, or for advice.

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WHITTAKER
EST. 1890

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SALES REPRESENTATIVES

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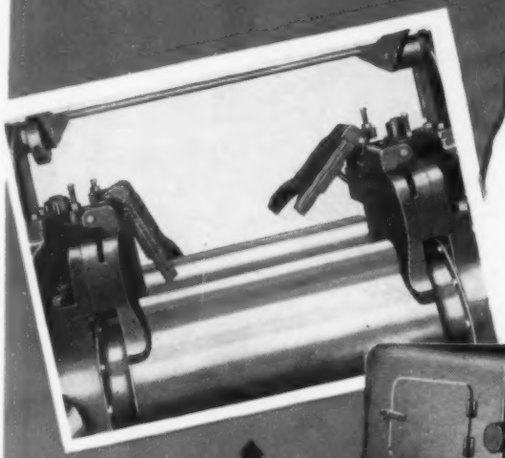
ADAMSON UNITED

Introduces Newly Designed

MILLS and CALENDERS

for RUBBER, SYNTHETICS and PLASTICS



Close Up of Tiltable Guide

Adamson United 28" x 72", 4 Roll Calender.

Adamson United 19" x 24" Mill

Note These Outstanding Mill Features

FOR HIGH TEMPERATURE OPERATION:

- SPECIAL BEARING METALS or ANTI-FRICTION BEARINGS, provided with *flood lubrication* and *temperature conditioning of oil.* (Cooling before recirculating.)
- ROLLS accurately bored to assure *uniform roll surface temperatures.*
- STUFFING BOXES of improved type with syphon arrangement for introduction of high pressure steam to rolls.

FOR MAINTAINING CLEAN, UNCONTAMINATED STOCK:

- BEARING OIL SEALS that *really* keep oil *in* bearings and stock *out* of bearings.
- TILTABLE STOCK GUIDES to facilitate cleaning.
- STOCK GUIDES AND STOCK PANS made of chromium or stainless steel.
- SMOOTH, dust-shedding SURFACES.

ADDITIONAL ADVANTAGES:

- New and Unique Types of Power Transmission.
- Precision Front Roll Position Indicator.
- Motorized Roll Adjustment.
- Power or Manually Operated Roll Scrapers.

Many of the above improvements also apply to our Modern CALENDERS.

Adamson United Company engineers specialize in the design and construction of equipment for special or unusual processing requirements. Their experience and abilities are at the service of the industry.

ADAMSON UNITED COMPANY AKRON, OHIO

DISTRICT SALES OFFICES:
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140 South Clarke Street, Chicago 3, Illinois Telephone: Central 1353

SUBSIDIARY OF UNITED ENGINEERING AND FOUNDRY COMPANY
Plants at Pittsburgh, Vandergrift, New Castle, Youngstown, Canton

Calumet-

-a G.R.S. WHOLE TIRE RECLAIM

Another Pequanoc Quality Standard

★

Low Gravity • High Tensile
Laboratory Controlled

★

Calenders and Tubes Well
Cuts Compounding
and Processing Costs!

★

This addition to the Pequanoc line of reclaim has many uses and in the not too distant future will be produced in volume to meet your requirements.

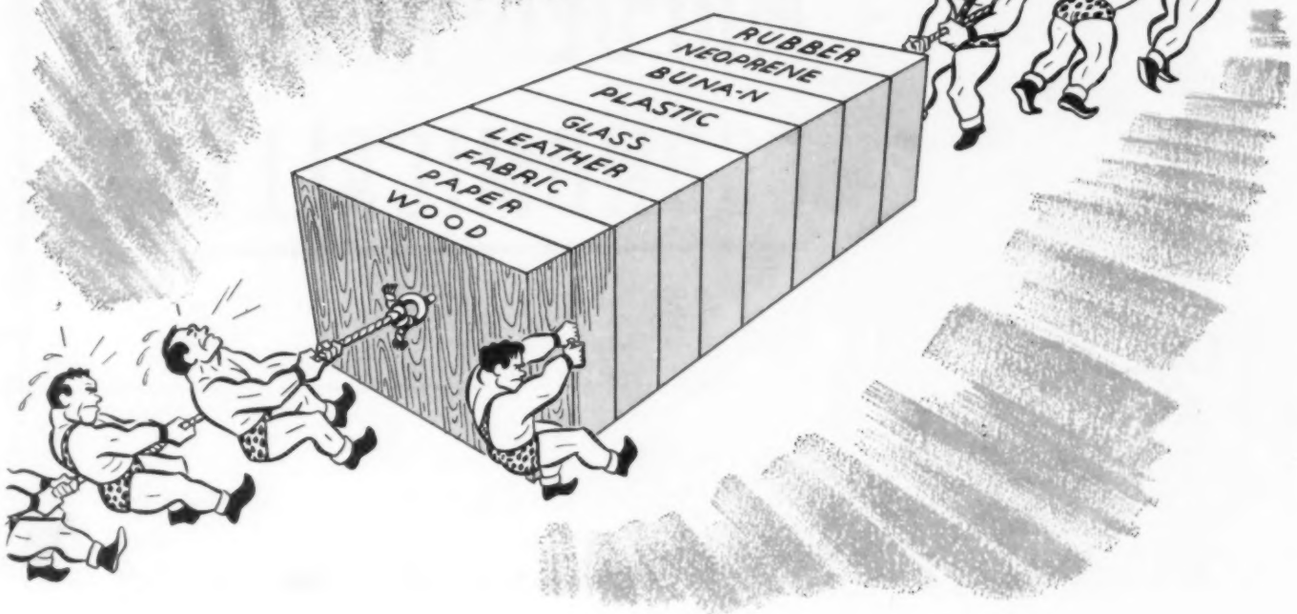
★

PEQUANOC RUBBER CO.

QUALITY RECLAIMS FOR SPECIFIC PURPOSES

BUTLER NEW JERSEY

UBABOND
bonds them all



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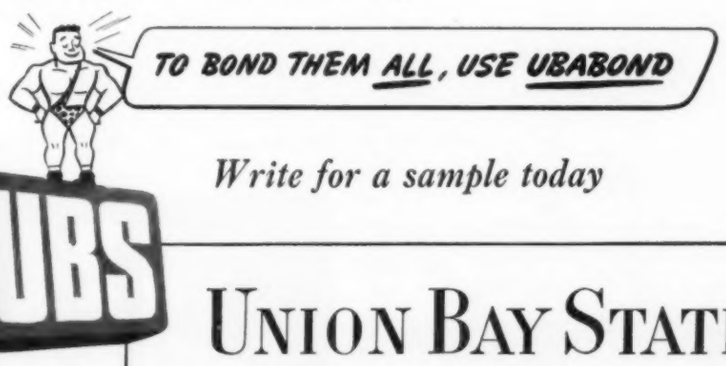

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Technical Bulletin No. 21 — on the Compounding of GR-S with Substantial Loadings of Zinc Oxide

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1	1120	785	215
2	1200	745	255
3	1280	715	255
4	1370	685	260
5	1360	695	255
10	1210	635	255
15	1280	655	255

20-HOUR AIR PRESSURE HEAT TEST*

Time of Cure Min. at 310° F.	Tensile Strength (psi)	Per Cent Elongation	Modulus Load (psi) for Elongation of 200%
1	1225	495	575
2	1270	495	580
3	1280	515	585
4	1280	515	625
5	1250	545	550
10	1190	575	575
15	1170	595	515

* 260° F. Temp. 80 Lbs. Air Pressure.

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The RUBBER AGE

VOLUME 59

NUMBER 2

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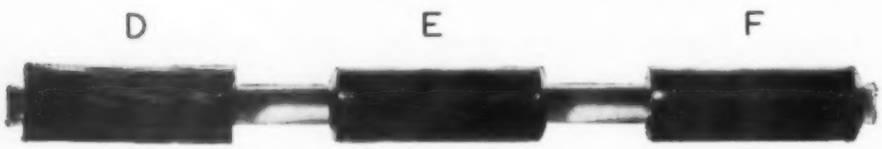

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RUBBER AGE

VOL. 59, No. 2 MAY, 1946

Over a period of years a large number of test methods have originated in the various laboratories of the Navy Department's Bureau of Ships. Starting with this issue we begin publication of a series of articles representing a compendium of these test methods, including a brief description of each and indicating the originators. The series, which will appear over a period of six to seven months, will cover numerous tests, as outlined in the first installment herewith. Over 90 illustrations will be used in connection with the test descriptions.—Editor.

Developments in the Field of

Testing Procedures for the Evaluation of Natural and Synthetic Rubbers and Plastic Elastomers

Sponsored by Bureau of Ships, Navy Department

Part I

By THEODORE A. WERKENTHIN

Principal Materials Engineer, Bureau of Ships, Navy Department, Washington, D. C.

THE requirements for rubber materials utilized on board ship and in connection with the operation of Naval vessels are, in most instances, much more severe than those required of these same materials for shore use. Replacement of these materials is much simpler for shore uses, where adequate stores may be maintained at all times and where sources of supply are readily available. Naval vessels must be independent of shore establishments or supply ships for long periods of time, or for periods of indeterminate duration, so that unexpected failures must be kept to a minimum.

It has been necessary to evolve numerous specialized test procedures which will thoroughly evaluate the rubber and all component parts. The aim has always been to utilize methods that are simple and inexpensive and which will require a minimum amount of time to obtain the necessary readings. Of course, accuracy and reproducibility of results are essential requirements of any method of test. The fulfillment of these aims has been important in expediting procurement. The effectiveness of the statistical method of sampling is another important feature in this testing, but will be considered in detail in another paper.

Note: The opinions or assertions contained herein are the private ones of the author and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

The thorough evaluation of natural rubber has been a problem which has taxed the ingenuity of the rubber technologists for many years. Improvements made in compounding and in manufacturing of rubber goods have resulted in improved techniques in testing, but with the advent of the many different types of synthetic rubber and plastic elastomers in the last few years, the complexity of testing has been increased almost logarithmically. Tests that were entirely satisfactory for evaluating natural rubber were found inadequate and often misleading when applied to the various synthetic rubbers.

In addition, it was found that a particular test which might work well with one or several of the synthetics would give erroneous results with another of the synthetics. The normal procedure in testing the efficacy of a method of evaluation frequently had to be revised, condensed, or entirely modified. Methods were adopted tentatively, only to be superseded by improved techniques which would conserve testing time or which were more reproducible and reliable in their results. In other instances, test procedures were modified because the apparatus utilized could be simplified and reduced in cost.

A typical example of the transition of a test procedure is that of the seal aging test used in evaluating

A Word About the Author...

Theodore A. Werkenthin is Principal Materials Engineer, Civilian-in-Charge of the Rubber Subsection of Research and Standards, Bureau of Ships, Navy Department, Washington, D. C. He is charged with research, development, specification writing, and all other phases of work with rubber, synthetic rubber, and plastic elastomers. Mr. Werkenthin received his B.A. degree in 1921 and M.A. in 1923 from the University of Texas. He also did post graduate work on his Doctorate at Texas University in 1924 and again in 1935 on various hydrocarbon polymers and resins derived from petroleum. He taught both organic and inorganic chemistry at his Alma Mater; at Taylor University, Upland, Indiana, as Head of the Chemistry Department, and at Queens College, Charlotte, N. C., also as Head of the Chemistry Department.

Mr. Werkenthin's industrial experience was gained with the Solar Refining Company, Lima, Ohio, as Research Chemist; as Plant Engineer with the White Eagle (Socony) Refining Co., Augusta, Kansas; as Technical Superintendent with the Grayburg Oil Corporation, San Antonio, Texas; and as Assistant Chief Chemist with the Deep Rock Oil Corp., Cushing, Oklahoma. During his six years with the latter concern he became interested in rubber manufacture and research in connection with improvement of packing and gaskets, gasoline and oil hose, drilling equipment and rubber solvents and diluents made from petroleum.

He became associated with the Navy in 1937, working with rubber decking materials and plastics. His dual experience with petroleum and rubber proved of value during the period when the country had to look to petroleum for most of its synthetic rubber. He is credited with building up the rubber interests of the Bureau of Ships since 1937 so that it now includes four rubber manufacturing shops, and eight laboratories equipped for rubber testing, compounding, development and research. Numerous patents and technical publications attest to the importance of this work to the rubber industry.

Mr. Werkenthin is a member of the American Society of Naval Engineers, the Society of Sigma Xi, and Phi Lambda Epsilon honorary Chemistry Society. He is active in the Rubber Division of the American Chemical Socity and the American Society for Testing Materials, being a member of A.S.T.M. Committee D-11.

gasket materials for watertight and airtight doors and similar closures. The vicissitudes of this development, which covered a period of years, were described by the writer and coworkers elsewhere.*

The author, who is chairman of a special committee of the Federal Specifications Executive Committee for Rubber Products to revise and bring up-to-date Federal Specification ZZ-R-601, Rubber, General Methods of Tests, was impressed with the large number of test methods which had originated in the various laboratories of the Bureau of Ships. It was, therefore, thought desirable to prepare a compendium of such test methods, giving a brief description and indicating the originators of each of the methods.

In the "good old days", government specifications and test procedures were frequently written long after the commercial products had been on the market and after much consumer purchase experience had been obtained. As a result of special conditions due to the critical supply status of natural rubber and the abovementioned peculiarities of the synthetic rubbers, adequate new tests had to be developed. These tests must be of such a nature that they would not put an undue burden on the rubber manufacturers or on the staffs of the inspectors' offices.

When it comes to "whittling down" the number and types of tests to insure the quality of Navy rubber materials, some of the writer's friends accused him of doing this with his tongue in his cheek. That is understandable when the safety of our boys was at stake, where the proper functioning of a gasket or life preserver meant life or death, or where the reliability or unreliability of fueling hose might spell the difference between a Naval engagement won or lost. Naturally everything humanly possible was done to insure that no faulty material was accepted or issued.

All tests intended for approval or inspection testing must be accomplished as rapidly as possible. If a new procedure was developed which would save time or effort, the old method was discarded, provided, of course, that the equipment required by the new method was obtainable by all concerned.

The different test procedures developed at the request of, and under the supervision of, the Rubber Section of the Bureau of Ships will be divided into several larger groups for purposes of simplification; namely, Adhesion, Thermal, Rheological, Chemical, Light and Weather Resistance, Diffusion, Wear and Abrasion, Swelling and Immersion, Vibration and Shock Absorption, Tear and Cutting Tests, and Surface Integrity Tests.

OUTLINE OF TESTS DISCUSSED

A. Adhesion Type Tests

1. Strip and Shear Adhesion for Cements.
2. Uniform Rate Spring-Scale Strip Adhesion Tester.
3. Deadweight Adhesion Tests of Cements, Rubber to Metal, with particular Emphasis to Use on Hollow Propeller Shaft Jigs.
4. Hydrostatic Adhesion for Hollow Shaft Covering. (33R7).
5. Shear and Tension Adhesion.
6. Machine Method Strip Adhesion Test.
7. Modified Machine Method for Determining Hose Adhesion.
8. Cleavage Adhesion for Hard Cellular Buoyancy Material.
9. Shaft Covering Adhesion Between Metal and Hard Rubber and Between Hard Rubber and Soft Rubber.

* Werkenthin, Swenson, Chatten & Morris, "Sealing and Seal Aging Properties of Rubber Gaskets," *R. A. (N. Y.)*, Vol. 56, pp. 389-396, 513-518 (Jan. and Feb., 1945).

B. Thermal Type Tests

I. At Elevated Temperatures

1. Simulated Continuous Process Cure.
2. Hot Crushing Test of Wire Cover Stocks.
3. Relative Resistance to Contact with Hot Surfaces.

II. At Low Temperatures

1. Flexibility Test for Welding Hose.
2. Constant Angle Deflection Flexibility Test.
3. Werkenthin Flexibility Test for Gaskets.
4. Brittleness Test in Liquid Medium.
5. Brittleness Test in Cold Air.
6. Rex and Shore Hardness at Low Temperatures.
7. Elongation Test at Low Temperatures.
8. Ball Drop Test.
9. Pendulum Impact Test.
10. Wooden Mallet Impact Test.
11. Cold Compression Set Test.
12. Plastic Tubing Impact Test at Low Temperatures.

C. Rheological Type Tests

1. Compression-Deflection Test of Laminated Rubber Sheets.
2. Measurement of Creep—Static.
3. Dynamic Creep Test.
4. Hot Flow Creep Test.
5. Resilience Test.
6. Extrusion Test for Thermosetting Masses.
7. Shrinkage Test of Battery Compartment Lining.
8. Plastic Flow of Battery Compartment Lining.
9. Wiley Sealing Apparatus.
10. Mare Island Sealing Apparatus.
11. Large Mare Island Sealing Apparatus.
12. "Referee" Seal Aging Method.
13. Shatterly Seal Aging Tester.
14. Swenson Seal Aging Tester.
15. Swenson Indentometer for Gasket Rubber.
16. Modified Pusey and Jones Indentometer.
17. Variable Load Indentometer.
18. Improved Pusey and Jones Plastometer.
19. Compression Set Test for Ramp Gate Gasket.
20. Compressibility Tests of Ramp Gate Gaskets.
21. Sponge Rubber Flexing Machine.
22. Flow of Rubber-like Materials Due to Change in Pressure.

D. Chemical Type Tests

1. Identification of Plasticizers in Polyvinyl Chloride.
2. Guayule Extraction Test.
3. Determination of Free Carbon in Compounds of Natural Rubber, Buna S, Buna N, and Vinyl Polymers and Copolmers.
4. Water Solubility Test of Cellular Hard Rubber.
5. Accelerated Corrosion Test for Flame Sprayed Organic Coatings.

E. Light and Weather Resistance Tests

1. Ultra-Violet Light Accelerated Aging Test.
2. Powder Method to Quantitatively Determine Degree of Cracking of Rubber.
3. Ozone Aging Apparatus for Rubber.

F. Diffusion Tests

1. Hydrostatic Test for Hard Cellular Rubber for Floats.
2. Inflation and Porosity Test for Rubber Gloves.
3. Modification of Suter Water Permeability Tester to Liquids Other Than Water.
4. Vapor and Liquid Permeability Test Through Fabrics.

G. Wear and Abrasion Tests

1. Wear Test on Hose and Other Circular Shaped Rubber Materials.
2. Wear Test of Plastic and Rubber-Like Materials Used in Walk-Way Surfaces.

H. Swelling and Immersion Tests

1. Change in Cold Resistance as Criterion of Swelling and Immersion Characteristics.
2. Rapid Volume Increase Test for Rubbers.
3. Rubber Glove Finger Swelling Test.
4. Simulated Service Immersion Test for Life Belts.
5. Resistance to Intermittent and Concomitant Contact with Sea Water and Gasoline.

I. Vibration and Shock Absorption Tests

1. Method for Determining Vibration Absorption of Matting.
2. Compression Deflection Test for Submarine Battery Lining.
3. Shock Test of Submarine Battery Lining.

J. Tear and Cutting Tests

1. Wire cutting test for Rubber Gloves and Similar Materials.

K. Surface Integrity Tests

1. Surface Integrity Determined by High Frequency Spark Tester.

ADHESION TEST METHODS

Strip and Shear Adhesion for Cements: The evaluation of cements, where adhesion to metal is required, has caused the problem of accurately determining the adhesion between the rubber and the metal. One of these methods is strip, shear, and tension adhesion tests of cements, which have been in use in connection with

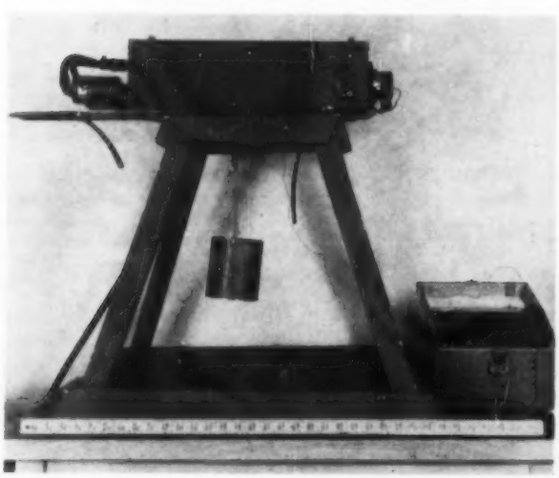


FIG. 1—Apparatus for a strip adhesion test at elevated temperatures.

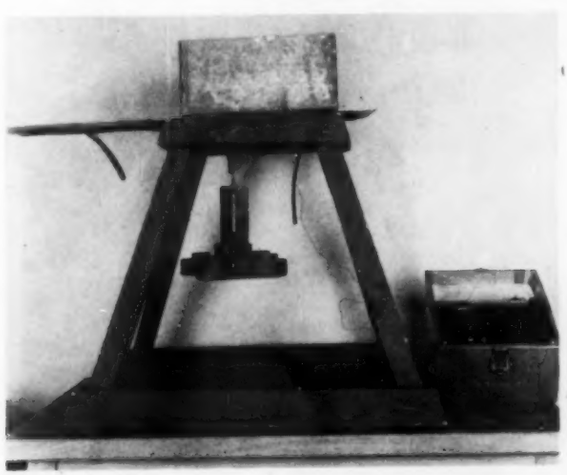


FIG. 2—Apparatus for a strip adhesion test at low temperatures.

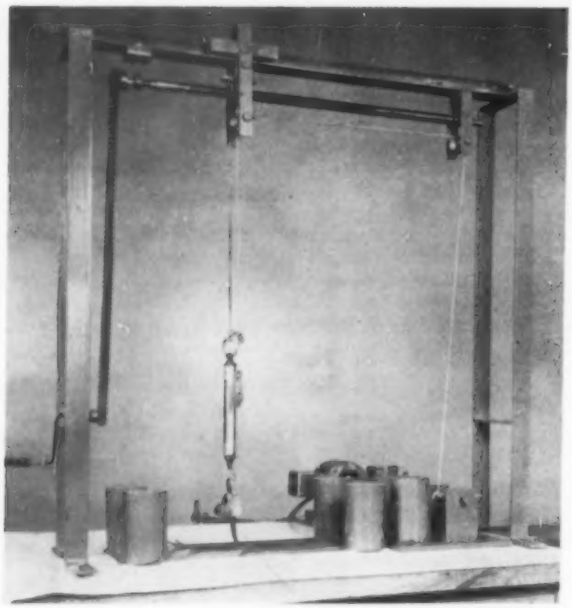


FIG. 3—Uniform rate spring-scale strip adhesion tester.

the evaluation of submarine battery compartment lining for a number of years. This method consists simply of adhering a sheet of rubber to a sheet of metal, and then cutting the rubber clear to the metal 1" apart. A small groove about 1/4" wide is cut on either side of the 1" cut in order to prevent lateral adhesion between rubber and rubber, which might give a false adhesion value of the rubber to metal.

This adhesion procedure is usually carried out at room temperature, although tests have been developed by the Material Laboratory, Navy Yard, New York, in which this procedure is followed to determine adhesion at 160°F. (Fig. 1) and at 32°F. ± 2° F.

FIG. 4—Apparatus used in testing adhesion of rubber cover to hollow propeller shaft jig by the strip method.

(Fig. 2). In the former, a heating element is placed on the metal on the opposite side to which the rubber is attached. In this manner, the plate, and, consequently, the cement interface of the rubber and metal, will be at the temperature controlled by the heating element. Similarly by placing a tank containing ice water on the obverse side a temperature approaching 32°F. may be obtained.

In each of these strip adhesion tests, a section of the 1" wide strip of rubber is cut back and the clamp is securely fastened and weights of the proper size are attached to the clamp. Weights are added to the container attached to the clamp until a separation of the strip from the panel results, which is approximately 1" per minute.

Uniform Rate Spring-Scale Strip Adhesion Tester: An improvement in adhesion strip testers was made by S. A. Eller of the Material Laboratory, Navy Yard, New York (Fig. 3). This tester is particularly suitable for room temperature adhesion and for adhesion after immersion in various test fluids. As will be seen by looking at Fig. 3, the free end of the rubber strip is attached to a spring balance which is lifted at a rate of 1" per minute. The balance is moved manually in the direction of stripping and at such a rate as to keep the line of load application always at an angle of 90° to the test panel. The weights shown in the illustration are merely for the purpose of holding the sample test panel in place. This apparatus has been found to be a marked improvement over the older types. The fluctuations in adhesion, due to non-uniformity in adhesive strength, can be readily and instantly detected by this method.

Deadweight Adhesion Test of Cements, Rubber to Metal, With Particular Emphasis to Use on Hollow Propeller Shaft Jigs: A procedure of measuring the strip adhesion on a circular jig simulating a hollow shaft is shown in Fig. 4. This strip adhesion test is similar in all respects to the ones mentioned above, except that the circular jig is permitted to roll free

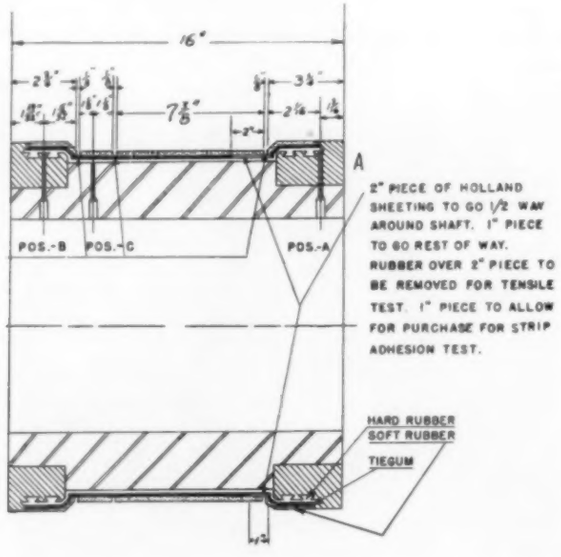

16"
7⅞"
A
2" PIECE OF HOLLAND SHEETING TO GO 1/2 WAY AROUND SHAFT. 1" PIECE TO GO REST OF WAY. RUBBER OVER 2" PIECE TO BE REMOVED FOR TENSILE TEST. 1" PIECE TO ALLOW FOR PURCHASE FOR STRIP ADHESION TEST.
POS.-B
POS.-C
POS.-A
HARD RUBBER
SOFT RUBBER
TIEGUM

FIG. 5—Hydrostatic adhesion apparatus for hollow rubber-covered shafts.

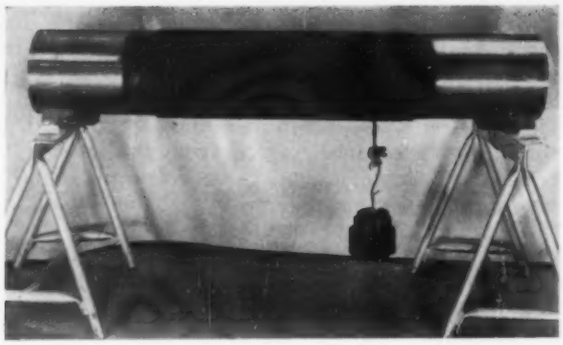


FIG. 6—Solid propeller shaft jig showing cured covering and method of testing adhesions.

so that the angle of pull is maintained at approximately 90°.

Hydrostatic Adhesion for Hollow Shaft Covering (33R7): This procedure was developed to determine the adhesion between metal and hard rubber. It is described in some detail in Navy Department Specification 33R7, and is illustrated by Fig. 5. Since the hard rubber cannot be stripped back in a manner similar to that used on soft rubber covering, a hydrostatic test was developed. This is briefly described as follows:

The test jig shown in Figure 5 has grooves and a provision for applying hydrostatic pressure under the synthetic rubber at three locations by means of 1/8" holes drilled approximately 1/4" apart and fitted with a removable plug that comes flush with the circumferential test grooves to prevent infiltration of the rubber covering into the openings. After vulcanization of the hard and soft rubber covering is completed at Location A, a minimum pressure of 50 p.s.i. is required. At Location B, a minimum pressure of 600 p.s.i. is required, and at Location C, a minimum pressure of 150 p.s.i. is required.

A modification of this procedure is utilized in determining the adhesion of rubber on solid shafting. A 1" wide cut is made in the rubber and parallel cuts on either side are made, approximately 1/4" to 3/8" wide, and this strip of rubber is removed in order to avoid lateral adhesion between rubber and rubber. This cut is made longitudinally and not circumferentially. Circumferential adhesion can be determined on solid shaft jigs if the shaft is free to roll so that a pull of approximately 165° to 180° is obtained. This method is described in Bureau of Ships Specification 33R6 (INT) and is illustrated in Fig. 6.

Shear and Tension Adhesion: Shear and tension adhesion apparatus developed by the Material Laboratory, Navy Yard, New York, are shown in Figs. 7 and 8, respectively. The type of grips used are the innovations in these tests.

Machine Method Strip Adhesion Test: Manually controlled strip adhesion methods described were found to be difficult to duplicate. The Material Laboratory, Navy Yard, New York therefore, developed a machine method using a Scott Tensile Machine. The apparatus used and the method of attaching to the Scott Tensile Machine is illustrated in Figs. 9 and 10. The rubber is attached by means of vulcanizing or cementing to a steel plate in the usual manner. The steel panel is fastened securely to the Scott Tensile Ma-

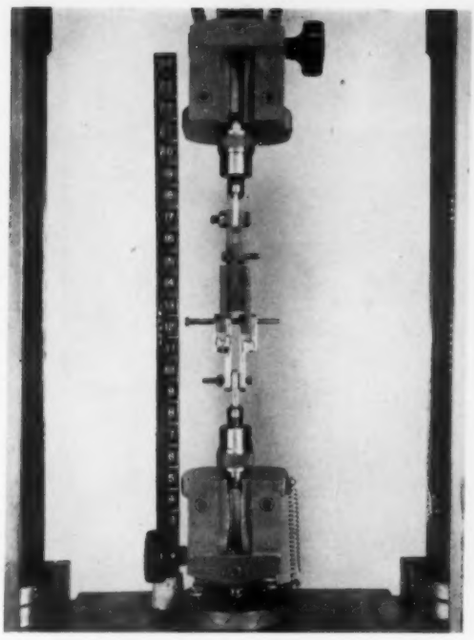


FIG. 7—Method of making shear adhesion tests.

chine. A 1" wide strip is incised in the rubber, together with the conventional parallel cuts to free the rubber. The rubber is cut back and is attached securely to a clamp which in turn is fastened to the jaws of the tensile machine by means of a stout wire. A Bakelite cylinder is held in back of the rubber strip, and the rubber strip is passed over the cylinder. The purpose of the Bakelite cylinder is to enable separation of the strip from the steel panel at an angle of about 90°. The Bakelite cylinder is 1¾" O.D. by 2" long and has a wall thickness of 1/8". The outer surface of the cylinder is covered with sandpaper which serves to prevent the rubber strip from looping away from the cylinder during the test. The sandpaper covering

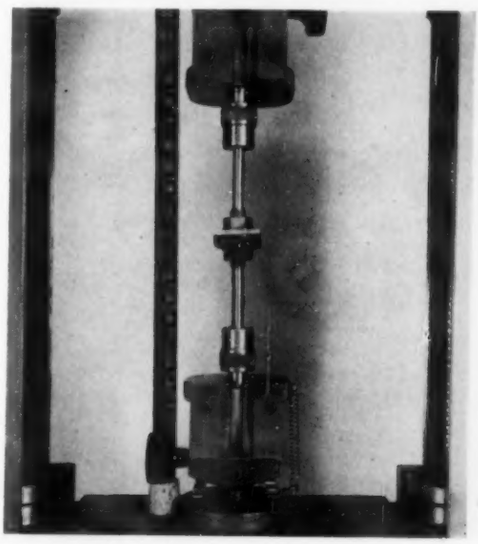


FIG. 8—Method of making tension adhesion tests.

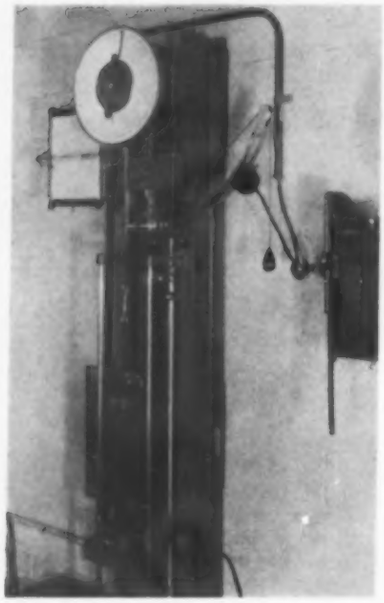


FIG. 9—Strip adhesion jig attached to Scott tensile machine.

is not shown in the illustrations. This test is resulting in more accurate evaluation of adhesion between rubber and metal and is being extended to include rubber strip bearings and other specialized items.

Modified Machine Method for Determining Hose Adhesion: The Material Laboratory, Navy Yard, New York has developed a machine method for determining adhesion of plies of various sizes of hose which has the advantages of the A.S.T.M. machine method, and at the same time, incorporates much of the procedure of the "deadweight method" which has been in use in the industry for a number of years. This test is carried out by making a cross cut and peeling back between the hose cover and the particular ply to be tested, or between the specific plies, the adhesion of which is desired to be determined. The section of rubber or impregnated fabric freed from the hose is attached to the clamp. The hose is fastened on a mandrel which in turn is supported in a U-shaped holder in such a manner that the mandrel is perfectly free to rotate. The U-shaped holder, holding the hose and mandrel, is securely fastened to the movable head of the Scott Tensile Machine. The clamp with the strip of rubber cover or rubberized fabric is fastened to the stationary head of the Scott Tensile Machine. The whole assembly is clearly shown in Fig. 11.

Cleavage Adhesion for Hard Cellular Buoyancy Material: In determining the adhesion between a relatively fragile cellular sponge rubber material and wood or to determine the adhesion between two sections of such cellular rubber material, a special test had to be developed. A test of this type is described in Navy Department Specification 52C29, covering a synthetic cement for hard cellular buoyancy material. Two sections of cellular hard rubber 1 1/2" x 1 1/2" x 1/4" thick are bolted, sandwich fashion, between two pieces of hardwood such as birch which are approximately 3" x 2" x 2". Eye bolts, 1/8" in diameter by 2" long, are mounted in each hardwood block approximately 3/8" from one end of the 3" dimension and approximately in the center of the 2" dimension, in such a manner that the bolt eyes will be on the outermost surface of the assembled specimen. These eye bolts are attached to the upper and lower jaws of a tensile testing machine, from which the usual clamps have been removed. The bolt holes should be counterbored

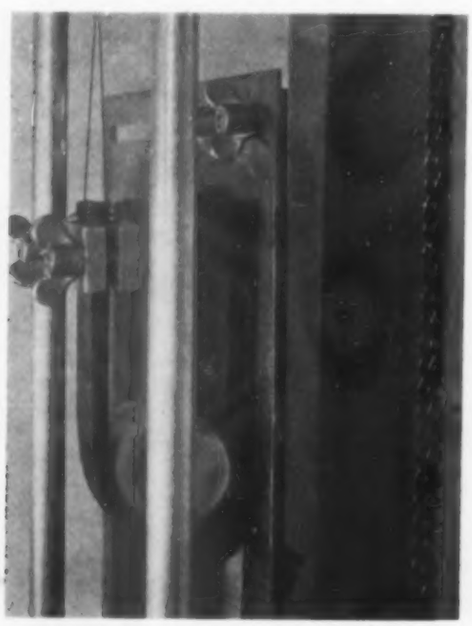


FIG. 10—Close-up view of strip adhesion jig.

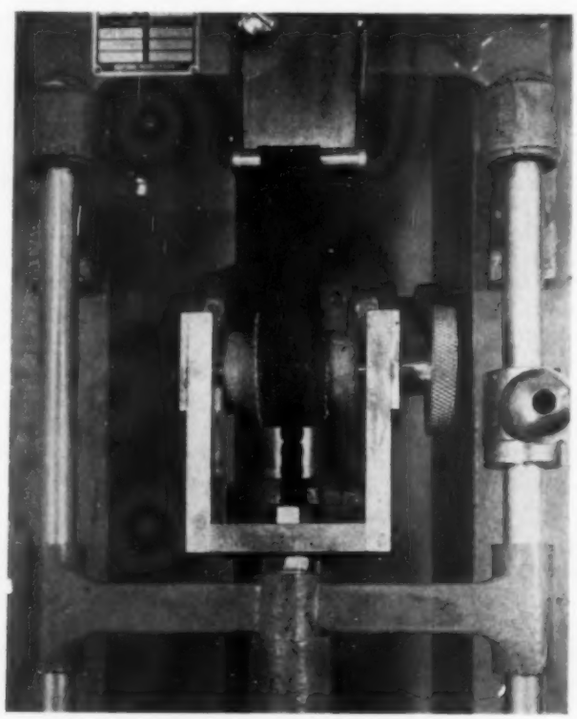


FIG. 11—Jig for making adhesive strength tests between layers of hose.

to permit the nuts and the bolts to be placed beneath the surface of the hardwood blocks.

The cellular rubber is then attached to the hardwood blocks by means of the cement to be tested, permitted to dry, and assembled, the eye bolt being placed at the same end of the specimen, with the eye bolt on the outermost surface. The sandwich specimens are placed under a load of approximately 2 pounds for 48 hours. This adhesion test is a modification of the wood cleavage test, and is a compromise between the strip adhesion and the straight adhesion determined in a conventional manner. One of the advantages of the cleavage adhesion test is that it permits visual inspection of the cement from the time when separation first takes place to the time when rupture occurs.

Shaft Covering Adhesion Between Metal and Hard Rubber and Between Hard Rubber and Soft Rubber: In the utilization of shafts which are rubber covered with a hard under layer followed by a soft abrasion resistant rubber, it was necessary to develop a technique which would determine the degree of adhesion obtained between the metal and the hard rubber as well as the adhesion between the hard rubber and the soft rubber. A forged steel jig having a hollow chamber is prepared, one side of which is flat, the other side being hemispherical. Two of these jigs are assembled in such a manner that the tie gum is placed next to the metal, then the hard rubber, then the soft rubber, then the other layer of soft rubber, layer of hard rubber, and the tie gum next to the other jig. The whole is securely bolted together and spaced apart so that the rubber is neither compressed nor permitted to expand. After curing, the jig is hack-sawed into segments as shown in Fig. 12. Special holders were developed which insure even traction in determining adhesion.

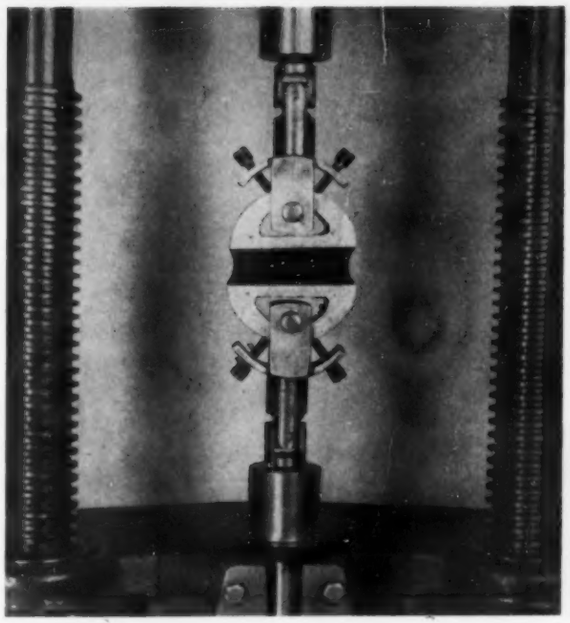


FIG. 12—Hard and soft shaft covering adhesion test.

(To Be Continued)

Water Dispersions of Saran for Coating Purposes

A SERIES of water dispersions of the Saran type resins, particularly suitable for coating purposes, the use of which is reported to eliminate the toxicity and fire hazards which accompany the use of organic solvents required for some similar coatings, has been made available by the Dow Chemical Co., Midland, Mich. Some of the chemical and physical properties of these dispersions are outlined in an article on "Saran Coating Latex," by G. W. Stanton and W. A. Henson, of the Dow organization, in the May, 1946, issue of *Industrial & Engineering Chemistry*, from which the following data is taken:

The Saran coating latices are colloidal dispersions of solid polymer in water. The particle size, observed with an RCA type B electron microscope, is uniform and ranges from approximately 0.08 to 0.15 micron. The solids content can be made as high as 60% without sacrifice of particle size or distribution. The latices are somewhat sensitive to coagulation by electrolytes and water-miscible liquids. Infinite dilution of the latex with hard water produces no coagulation or unstabilizing effects.

In common with other water dispersions, the Saran latices show greater stability in contact with certain metals than with others. The order of preference of representative metals found to be satisfactory for processing and handling of the latices, with the pH adjusted between 5 and 8, follows: stainless steel, chromium, tin, bronze, brass, nickel, aluminum. The pH of the latex as normally furnished is in the range of 6.5 to 7.5, which may be raised to 12 by addition of ammonia, although some discoloration may occur in the higher range. Coagulation begins at a pH below 2.

The viscosity of the latex usually marketed is approximately 22 centipoises at 57% solids. This can be raised to any desired viscosity by the addition of small amounts of available thickeners, typical examples being hydroxyethylcellulose and sodium or ammonium alginate. Some degree of thixotropy is encountered as the viscosity is increased by addition of thickener. The Brookfield Syncro-Lectric Viscometer has been found satisfactory for determining viscosities of thickened latices.

A variety of plasticizers have been found suitable, either singly or in combination, for use with the Saran latices, including organic esters of phthalic, glycolic, sebacic and phosphoric acids. Water-soluble materials, such as dyes, lubricants, corrosion inhibitors, etc., may be added as water solutions or stirred directly into the latex. Water-insoluble extenders and modifiers, such as pigments, fillers, clays, etc., can best be incorporated in the form of water slurries or pastes.

A typical formulation for a coating composition to deposit a colorless, glossy, transparent, flexible finish on paper, cloth, wood, etc., comprises 100 parts Saran latex (57% solids), 23.8 parts dibutyl phthalate emulsion (60% dibutyl phthalate), and 1.7 parts hydroxyethylcellulose solution (5% solids).

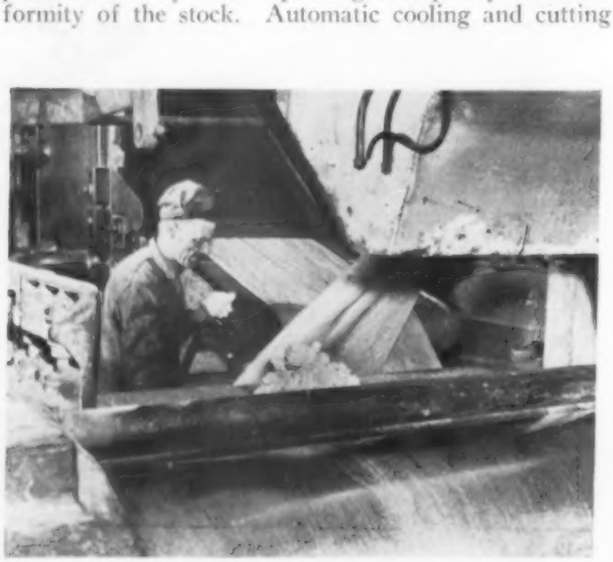
Savings in Labor and Floor Space Achieved by Hewitt Installations

By ETHELYN WELLER

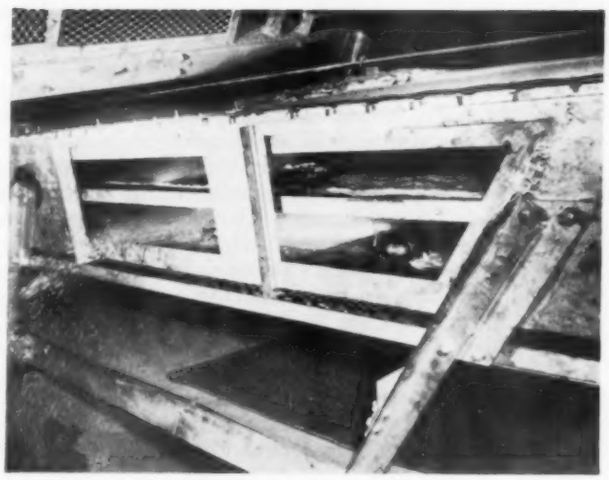
THE Hewitt Rubber Corporation of Buffalo, N. Y., has been a leading manufacturer of industrial rubber goods for over eighty years, its main products being hose and belting of all kinds. It has also recently gone into the foam latex field and is opening an entire new department for the manufacture of this product. The company has just purchased another large plant adjacent to their present building on Kensington Avenue, which will provide the space necessary for the new department.

In this new plant there will also be an expanded line of molded rubber goods manufactured. New machinery, of Hewitt's own design, is expected to introduce an entirely new injection molding process for more economical mass production of gaskets, bushings, grommets and bumpers.

Added production has meant more and better machinery. Until very recently the method of handling stock after it left the Banbury mixers was to slab 6 or 8 pieces off the mill by hand and hang them on a cooling rack. This was both time consuming and laborious. After the stock was cooled it was stamped by hand with the batch number and date before racking and storage. New equipment now installed at Hewitt mechanizes this whole process, both adding to the plant's efficiency and improving the quality and uniformity of the stock. Automatic cooling and cutting equipment has been installed at the No. 9 and No. 11 Banbury mixers.



Ribbon of rubber passing from the mill to transfer roll and on to cooling conveyor at the Hewitt plant. The transfer roll, here hidden by the mixer, is about on a level with the operator's head.



In this view the rubber ribbon is passing up the cooling conveyor. Sprays have been turned on above and below the conveyor belt.

The set-up now consists of the Banbury mixers with motor controls, 240-foot stock-cooling conveyors with helical stock cutters, and new equipment to handle and convey rubber compounds to the mixers. Necessary building alterations were the construction of conveyor, or "pent" houses, at the roof level of the mill room and installation of a concrete and steel foundation for the No. 11 mixer.

The new machinery will remove a batch of stock in a continuous ribbon 5/16 of an inch thick by 30 inches wide by approximately 100 feet long from the sheeting mill under the Banbury in about 60 seconds. The new unit will also cool the ribbon of stock, pass it through an automatic printing device which will stamp the batch number about every 15 inches and cut the ribbon into 30 inch squares.

The actual operation of the new cooling and cutting equipment begins after the stock has been discharged from the Banbury to the mill below. A pair of knives on a swing arm are pushed into place and locked by a toggle. A transfer roll mounted in a horizontal position over the mill is started and at the same time the starting switch of the main conveyor is turned on. Knives cut the stock into a ribbon approximately 30 inches in width, which is laid on a rough-top rubber and duck belt which carries the stock to a wire mesh belt.

As the stock passes from the short duck belt to the wire belt, it dips down about 4 inches to act as a trough to stop the spray solution from flowing back on the floor. The stock starts up the 35 degree angle of the conveyor and interrupts an electric eye beam which switches on a stream of coolant from a by-pass to the sprays.

These sprays are mounted above and below the wire belt, thus permitting active cooling for both sides. This portion of the wire belt is totally enclosed in the tunnel so that all the solution is confined. As the stock emerges from the sprays a blast of compressed air is forced over it, having been started through a solenoid operating valve controlled by the first electric eye. This blast of air removes excess water from the top surface of the ribbon and any entrained mist from the sprays is drawn up through an exhaust duct.

As the stock emerges from the tunnel it is transferred down through a series of three wire belts, operated at slightly increased speeds, until the timer stops the entire mechanism. At this point the stock has progressed through approximately one half the conveyor and is in position in the pent house, where fans drawing in air from one side, ejecting it from the other, evaporate any residual moisture and add to the cooling effect. The stock travels 240 feet while cooling.

The first batch remains in this position until the operator is ready to remove a second batch from the mill at which time the operations previously described are again performed. The first batch then passes on to the rough-top rubber duck belts and returns to just above floor level, where another electric eye stops the lower belts, and permits the take-off belt to continue running with the second batch.

When the second batch reaches the end of the timer cycle all starting circuits are interrupted and will remain so until the first batch is removed from return belt by passing through the cutter. As a slab is cut it is stamped with a number, date and mill man's identification symbol and placed on a truck by the mill operator. Thus the entire operation, through the help of the new cooling equipment, eliminates the operation of hanging the batches on the racks, and does the whole process with a minimum of time and labor. It takes from eight to sixteen minutes to run a batch through from mill to cut slabs ready for storage.

General view of Hewitt's fire hose department at Buffalo, giving some idea of lengths involved.

A group of weaving machines at the Hewitt plant on which covers for all sizes of hose are woven.

It was stressed by Ward Paley, superintendent of primary production for Hewitt, that it is of the utmost importance that a continuous ribbon be presented to the new cooling conveyors. This is effected through the use of the transfer roll previously mentioned, which is a motor-driven device operated at slightly greater circumferential speed than the front mill roll.

A cut is made with a mill knife and a relatively narrow ribbon of rubber is started over the transfer roll and fed down into the bank of stock immediately over the cut made by the ribbon. By this process it is easily within the control of the operator who may maintain an adequate bank at the removal point and at the same time complete the transfer of the stock at will from the far end of the rubber mill to the ribbon without interruption.

The coolant is circulated by a centrifugal pump and is refrigerated in summer by cooling coils. All electrical mechanism is located at a point which may be encased in a dead-front panel.

Speaking of the new equipment Frank W. Blanchard, factory manager, says, "The new machinery will increase both our capacity and production efficiency, and will improve our rubber compounds and products. The new cooling conveyors are long enough to cool the stock thoroughly before it is moved on to storage. This will tend to improve the quality of the stock by cooling it faster and more uniformly than was possible with previous equipment. An automatic cutter has also been installed which cuts each ribbon of stock into uniform size slabs as it leaves the conveyor. This will greatly facilitate our stock handling."

An unusual feature of the new system is the special "printing machine" for identifying rubber stocks.

Hewitt uses more than 250 types of rubber compounds in its various products, each mixed to an exact recipe. These must be most carefully identified.

The printing machine is mounted over the conveyor and stamps the stock every 15 inches with a special yellow ink that does not discolor the final mixture. Each compound has its own brand number and can be easily identified. This marking device is believed to be the first so used in the rubber industry.

Hewitt electricians and engineers worked many hours installing the new cooling conveyors and, as Mr. Paley says, getting the "bugs" out of it. Several minor changes were necessary and a few important innovations were strictly the product of Hewitt ingenuity, such as the method of handling the stock at the mill, the electric eye stopping device installed at the top of the conveyor, and other minor adjustments.

It is estimated that about 50 percent of the floor space formerly used in the old method of cooling, racking and cutting the stock will be saved, with 33 percent saving in labor.

Working conditions generally in this part of the plant have been improved, also, by the installation of a large exhaust and inlet blower system which removes smoke and dust from the mixing area. A complete change of air is provided every 20 minutes by this system.

A Note on the Reclaiming of GR-S

THIRD prize in the recent contest sponsored by the Chicago Rnubber Group on "The Utilization of Cured Synthetic Rubber Scrap" was won by H. Harmon Gillman, of the Gates Rubber Co., Denver, Colorado. This paper was reproduced in the March, 1946, issue of RUBBER AGE. At the conclusion of that paper before the January 25, 1946, meeting of the Chicago group, Mr. Gillman made a few pertinent remarks regarding the need for forward planning by the reclaiming industry with regard to development of new methods. His comments follow:

It is not inappropriate before closing this paper to say a few words about forward planning. Conover (*R. A.*, Vol. 57, p. 309, 1945) has stated that "new equipment with drastically new methods would not only be uneconomical, but most undesirable in view of time, materials, and manpower requirements."

What are the implications of this statement? It resembles in spirit a paragraph from Miller ("Chemistry & Technology of Rubber," p. 720, Reinhold Pub. Co., N. Y., 1937), i.e., "In the past the ambition of many inventors has been to develop a method of reclaiming rubber which would restore to it the properties it originally possessed . . . the modern reclaimer knows that such efforts are in vain."

We cannot subscribe to such a philosophy of defeatism. While we agree with Conover that for the present emergency it is essential to use present methods and equipment, it is also imperative that we discard at once this type of thinking when we turn to forward planning. If not, we will continue to market a mediocre product as in the past.

It is this same attitude of adherence to the status quo, of not being willing to discard outmoded practices, of not daring to venture into new fields, of not accepting new ideas that has retarded growth, that has caused us to produce a material of only passable nature. The goal must be set of not only developing a method of reclaiming rubber which will restore to it the properties it originally possessed, but will give to it new properties better than the original. This is within the realm of possibility, in the sphere of organic synthesis.

To emphasize the need for this reform in our thinking consider for a moment the nature of the advancements recorded since Marks. Rapid strides have been made in compounding of reclaim with excellent studies on testing and analysis, on pigment reinforcement, sulfur ratios, value of the hydrocarbon, rate of cure, and on typical formulations for different uses. Economy of operations has been achieved by finding the optimum conditions for plant operation, such as fineness of grind, temperature and time of digestion, washing, dewatering, drying, and refining.

Many strides have been taken in the mechanical and engineering phases—we have higher pressure boilers; better drives, motors, and pumps; improved power transmission, lubrication, and anti-friction bearings; modern classifiers; efficient washers, dewaterers, and driers; finally, high speed refiners. In addition, the latest methods of handling and conveying materials between unit operations have been adopted.

The resume given (in the original paper) demonstrates that we have done well with the practice and industrial art of reclaiming—but what of the science? No basic changes have been made in reclaiming during the last decades. It stands as one of the few remaining industries not taking part in the advances of the time. We echo the sentiments of le Beau (*R. A.*, Vol. 52, p. 510, 1943): "A bit to our shame that we have been 'cooking rubber' for fifty-odd years in the reclaim processes and, as yet, we do not have a clear knowledge of what actually takes place."

We must rid ourselves of the philosophy that we are doomed to produce an inferior material. We must discard present methods. We must stop trying this oil and that oil. We must get back to fundamentals. We must arm ourselves with the qualities of vision, and imagination, originality, creativeness, and clear thinking. The reclaim scientist must endeavor to produce a new substance. We must adopt the research spirit.

H. Harmon Gillman

New Type Waldron Coupling

The Coupling Division of the John Waldron Corporation, New Brunswick, N. J., has announced that a new "Series A" coupling has been designed for a much larger maximum bore to permit use of smaller sized couplings than would ordinarily be required. The smaller size coupling takes up less space, needs less shaft expansion, looks better, and costs less. It retains all of the features of the company's couplings, being all steel, dust proof, oil tight, and enclosed by one piece male and female sleeves that functions as a single rigid unit. The Waldron "Series A" couplings are made in the standard, heavy duty, and other types.

What Rubber Manufacturers Should Know About Federal Wage and Hour Standards

By FRANK P. DE SIO

Wage and Hour Division, U. S. Department of Labor, New York, N. Y.

Although the Fair Labor Standards Act has been in effect for several years, a goodly number of violations are reported to be due to a misunderstanding of both the requirements of the Act and its applicability. Accordingly, we asked the U. S. Department of Labor to prepare the accompanying article, especially slanted to the rubber manufacturing industry. In reading the article it must be remembered that Congress now has before it consideration of many recommendations for amendments to the Act, among these being proposals which would increase the minimum wage, include a statute of limitations, and eliminate certain exemptions.—Editor.

LAST year three out of every five rubber plants, which were inspected under the Wage and Hour Law, were found to have underpaid some of their employees either as to the minimum wage of 40 cents an hour or time and a half after 40 hours a week. (EDITOR'S NOTE: The term "rubber plants" as used in this article is used in the over-all sense, that is, it applies equally to tire repair shops, jobbing firms, and actual rubber manufacturing plants.)

The high ratio of violation revealed by the inspections does not indicate that most of the establishments in the rubber industry failed to meet the minimum wage and overtime pay requirements of the law, because under its wartime program the Wage and Hour Division was obliged to concentrate on those spots where, because of complaints or otherwise, it believed underpayments had occurred. Furthermore, under the wartime program it was possible to inspect only about one-tenth of all establishments in a given industry.

In any event, management in the rubber industry may wish to familiarize itself more fully with its obligations under the law, particularly in view of the double money liability involved where employees sue for recovery of underpayments of the minimum wage and overtime compensation required to be paid them under the law.

Types of Violation Encountered

Nearly two-thirds of all the employees found to be affected by monetary violations were employed in a handful of firms representing less than two percent of all the establishments found in some violation. These few plants were primarily engaged in manufacturing tires and tubes or in producing rubber sundries. Violations were not concentrated in establishments of any particular size. Many violations were found in large as well as in small establishments.

But what was most surprising perhaps, in view of the fact that the minimum wage of 40 cents an hour has been in effect since July 28, 1941, was the large number of plants in violation of the minimum wage provision of the law. About one-third of the inspected establishments found to be in violation paid some of their employees less than 40 cents an hour. A great number of plants failing to pay the minimum wage were those engaged in tire retreading and recapping, particularly in low wage areas, but such violations were also found in plants other than tire retreading and recapping and in regions generally known to have higher pay scales. In particular, one of the manufacturing plants in New York State was responsible for a large proportion of the employees found to be paid less than 40 cents an hour.

Interpretation of Application

Guessing wrong on the application of the law is a serious matter especially where lines of demarcation have already been established by the courts. It should be borne in mind that the power of the Wage and Hour Administrator does not extend to giving authoritative interpretations of the provisions of the law. Only the courts have such power, and for this reason it often becomes necessary for the Administrator to keep management abreast of decisions handed down by the courts. Any doubts concerning the status of an employee under the law which cannot be resolved by direct reference to regulations and interpretative bulletins and releases made available by the Division may be clarified by consulting representatives of the Division in regional offices throughout the country.

Experience of the Wage and Hour Division indicates that violations most often occur because of a misunderstanding of the conditions under which workers are exempt from the minimum wage and overtime pay provisions of the FLSA as executive, administrative or professional employees. Pursuant to authority vested in him by the Act, the Administrator has separately defined the terms "executive, administrative and professional" and each and every requirement of the applicable definition must be met in order for the exemption to apply.

For example, an employee who is in other respects qualified as an executive under the regulations but who is not in sole charge of an independent establishment may of necessity perform a large amount of non-

exempt work. In such a case he would not ordinarily be exempt as an executive employee. Also, an employee who would otherwise meet the requirements for the administrative exemption would, in general, lose the exemption if he performed any non-exempt (non-administrative) work.

However, the performance as an incident of an administrative job, of some routine work which is functionally related to the carrying on of the employee's exempt administrative duties (duties involving the exercise of discretion, independent judgment, etc.) would not defeat the exemption. Since responsibility for making a correct classification is assumed by the employer who claims that the exemption is applicable, he may wish to consult the Division if the status of the employee is not entirely clear.

It may be well also to bear in mind that in no event can an employee who otherwise qualifies for exemption be classified as an executive if his salary is less than $30 a week, or as an administrative or professional employee if his salary is less than $200 a month or $50 a week.

Requirements of Executives

But, as has already been indicated, compensation is not the only test. Before an employee can be classified as an executive, administrative or professional employee, he must meet *all* the basic requriements for such exemption, here summarized:

(1) *Executive*

(a) Minimum pay—$30 a week, on a salary basis, and

(b) Must have as his primary duty the management of an establishment or a recognized department, and

(c) Must customarily and regularly direct the work of other employees and exercise discretionary powers; must have authority to hire or fire or make suggestions and recommendations which will be given particular weight, as to the hiring, firing, advancement and promotion of the subordinate employees, and

(d) Must not perform non-exempt work (work of the same nature as that performed by non-exempt employees) in excess of 20 per cent of the number of hours worked in the workweek by the non-exempt employees under his direction, except where the employee is in sole charge of an independent establishment or a physically separated branch of an establishment.

(2) *Administrative*

(a) Minimum pay—$200 a month or $50 a week, on a salary or fee basis, and

(b) Must, with the exercise of discretion and independent judgment

(1) regularly and directly assist an executive or administrative employee, where such assistance is non-manual in nature, or

(2) perform under only general supervision, responsible non-manual office or field work, directly related to management policies or general business operations, along specialized or technical lines requiring special training, experience or knowledge, or

(3) execute only under general supervision non-manual assignments and tasks directly related to management policies or general business operations.

(3) *Professional*

(a) Minimum pay—$200 a month or $50 a week on a salary or fee basis, except in cases of the licensed practice of law or medicine, and

(b) Must consistently exercise discretion and judgment in the performance of non-routine work of an intellectual character requiring knowledge which is ordinarily acquired through professional study, or in a field of artistic endeavor which is predominantly original and creative in character, and

(c) May perform no more than 20 per cent non-exempt work.

Rubber manufacturers sometimes have difficulty with regard to the inclusion of bonus payments in computations of regular rate of pay for overtime purposes.

This difficulty can easily be avoided. No additional overtime compensation need be computed and paid on a bonus, the amount of which is in fact arrived at by taking a predetermined percentage of the total earnings of the individual employees (both straight time and overtime), exclusive of the bonus.

Unless this method of bonus payment is used, it becomes necessary to distinguish between bonuses that do not need to be included in computing the regular rate of pay for overtime purposes and those that do.

In bonus plans falling within the first category, both the payment and the amount of the bonus are solely in the discretion of the employer, and such bonus payment *need not be* included in computing the employee's regular hourly rate of pay and overtime compensation. This type of bonus is illustrated by the payment by an employer to his employees of a share of the profits of his business or a lump sum at Christmas time without having previously promised, agreed or arranged to pay such a bonus.

In bonus plans of the second category, however, the employer promises, agrees or arranges to pay a bonus. The amount to be paid may be fixed or may be ascertainable by the application of a formula. Bonus payments of this type will be considered a part of the regular rate at which an employee is employed, and *must be* included in computations of regular rate of pay and overtime compensation.

An example of this type of plan is a production bonus based on the excess over a minimum quota which the individual, the group, or the plant, produces in a period of time. Closely akin is a bonus which is paid for the performance of work in less than an established standard time and also a bonus which is paid when certain types of merchandise are sold through an employee's efforts.

Legal Rights of Employees

In the absence of authoritative decisions by the courts, the Divisions, as a matter of enforcement policy, do not insist on the inclusion of any bonus (except where there is obvious evasion of the Act's overtime requirements) which is paid at greater intervals than quarterly in computations of the regular rate of pay for overtime purposes, even though the bonus would otherwise be of a type requiring such inclusion. This enforcement policy, of course, does not affect the rights of employees to bring their own suits to recover whatever may be due them.

Enclosed Field Coils Solve Rubber Mill Problem

By JOHN S. ASKEY

Manager, Commercial Insulation Section, Westinghouse Electric Corp., East Pittsburgh, Pennsylvania

THE unprecedented demand for rubber to supply our wartime needs resulted in the rapid development of and production in large quantities of synthetic rubber. Many words have been used, and rightly so, to emphasize the great strides made by the rubber industry in its production. Little was said, however, which reflected the efforts required from a maintenance standpoint. A typical Banbury mixer installation is shown in Fig. 1.

The importance of reliability of synchronous motors in the rubber mills was realized long before the war began. Motors driving Banbury mixers were built with special protective features, including application of insulating varnishes to the windings to provide a fine glossy finish. This finish was necessary to facilitate cleaning during customers' maintenance. Motors so built and protected gave many years of satisfactory service.

The transition from natural to synthetic rubber was the source of new and varied manufacturing problems for the rubber mill operator. Among these were the selection of proper ingredients for the rubber mix. During this development it is natural that some changes in ingredients were made. As production increased in leaps and bounds until it reached a 7-days-per-week, 24-hours-per-day schedule, the maintenance personnel found little or no time for the "usual" week-end shutdown for inspection of equipment.

This element, coupled with other factors not appreciated at the time, soon evidenced itself in the form of field coil flashovers. At first these flashovers were attributed to penetration of carbon black, used in the rubber mix, which was suspected as providing a creepage path from the coil to ground across or through the main insulation employed between the coil and pole piece. However, it was found rather to occur across the outer face of the coil. Such a flashover could occur from the field coil terminals to the spider. Usually sufficient damage resulted to require shutdown and repair of the rotor, thus curtailing the production of rubber vitally needed.

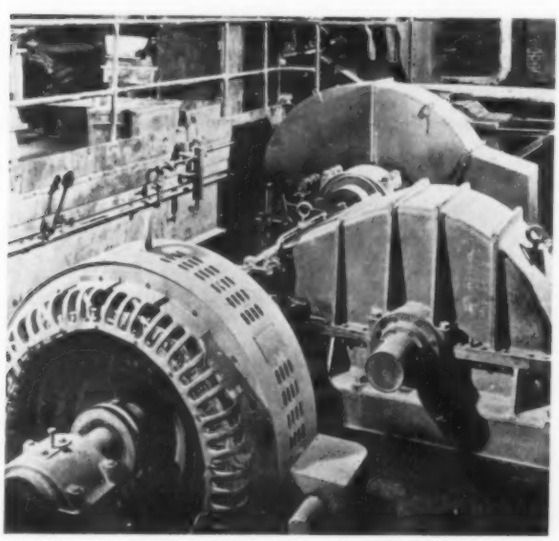


FIG. 1—Typical installation for Banbury mixer.

FIG. 2—Comparison of new rubber mill type field coil (left) with motor field coil formerly used.

Such flashovers occurred suddenly on motors which had been operating many years. The same trouble was experienced on new rotors. The incident of failure was not peculiar to any given type or design of rotating field coil, flashovers happening almost at will, but always across the outer surfaces of the rotor coils.

In view of the frequency of these troubles, an investigation was undertaken in an effort to maintain rubber production. We found that new types of carbon black were being used. The usual maintenance for large rubber mill motors has consisted of removal of dirt adhering to the windings by means of blowing with compressed air. This procedure is recognized as the quickest way to clean large apparatus. It must be remembered, however, that too great an air pressure (in excess of 60 lbs.) may loosen the binding tape and blow dirt under this outer tape. Dirt blown out of one machine is likely to be drawn into others that are in operation near it.

The dirt adhering to the windings of both stator and rotor was found to be chiefly carbon black. Practically no trouble of this type had been experienced

with stators. Examination of the carbon black now in use as compared to that formerly used in natural rubber showed the new material to be approximately one hundred times more conducting, more adhesive, and of finer particle size.

Tests indicated that it was undesirable to "blow" carbon black from the windings. Such blowing merely redistributes the dirt and traps it in pockets where it provides a nucleus for subsequent creepage paths. Tests also showed that windings must be kept free from built-up coatings of this carbon black if flashovers were to be avoided. Improved results have been noted where, instead of blowing, dirt is removed by a suction process. Such a process must be sufficiently strong to really clean the new type of carbon black which clings tenaciously to the coil surface.

To alleviate this maintenance problem, Westinghouse has developed a Rubber Mill type field coil. Its comparative appearance is shown in Fig. 2. The Rubber Mill field coil is at the left while the coil formerly used is shown at the right. The Rubber Mill coil is constructed throughout with Class "B" (A.I.E.E. ratings) insulating materials. The insulation is thoroughly filled and sealed by a special impregnating process. The thorough filling of the coil coupled with the type of materials used provides maximum thermal conductivity. Because of its construction it is possible to rate the Rubber Mill coil 20°C. higher than the previous class "A" coils.

With the completely sealed construction of the new coil, the maintenance of synchronous motors, as regards cleaning, is minimized. No longer is it possible for carbon blacks to build up a creepage path, since even the connections are insulated and sealed against the source of trouble. Cleaning schedules may, therefore, be revised to a point where removal of dirt and dust accumulations shall be made only as required for satisfactory normal operation. In other words, maintenance cleaning should be scheduled often enough to eliminate possible complete clogging of the stator coil ends or of the stator ventilating ducts. Such clogging is, of course, injurious to motor performance and undoubtedly contributes to reduction of motor life by excessive heating.

As related above, the completely enclosed and sealed stator and rotor windings now are capable of withstanding the severe duty requirements of the rubber industry.

When cleaning these motors, the maintenance people will no longer find laminated insulation, crevices, cracks or other pockets into which the dust will become embedded. Blowing as a means of removal of dirt and dust is not objectionable except for the reasons stated. When other machines are nearby, and they usually are, vacuum cleaners of sufficient strength are recommended since they remove the dirt instead of merely redistributing it.

Uninterrupted service is so important that to control carbon blacks as a maintenance problem, arrangements have been made whereby, in general, Rubber Mill field coils can be supplied as replacements for existing equipment.

Two-for-One Twisters for Tire Cord Twisting

USE of two-for-one twisters for tire cord twisting was a system followed in the plant of the Vereinigte Glanzstoff-Fabriken, in Obernburg, Germany, according to a report prepared by Capt. J. L. Truslow and Robert M. Jones for the United States Office of Military Government for Germany. Although the principle of the two-for-one method is not new, the Obernburg installation is believed to be the first large-scale operation utilizing the method. Use of the system is reported to have produced the best tire cord in Germany.

The twister, built by Barmeg of Lennep, Germany, is reported to operate somewhat like the usual upstroke twisters. The supply package is mounted on a vertical spindle and drawn off upward to the receiving package. The receiving package is friction driven by surface contact with a drum roller. However, the supply package does not revolve with the spindle, as in the usual upstroke twister. Instead, the supply package remains stationary, while the spindle revolves within it. To accomplish this, the spindle is usually tilted, and one side of the package carrier is weighted heavily so that gravity prevents the carrier and its package from revolving.

The yarn to be twisted is drawn upward over the end of the supply package and passes down through the top of the tube placed inside the yarn package. This tube, like the package, is stationary. A yarn brake is placed in the top of the tube to prevent the yarn from being pulled off the supply package. The first twist is inserted between the yarn brake and the opening in the spindle. The yarn is guided laterally outward in a polished slot. Between the end of the T slot, which acts as a flier, and the thread guide above, a second twist is inserted. This results in two turns of twist for each revolution of the spindle.

Copies of the report (PB-15137), which includes schematic diagrams of both the single and ply spindles and receiving rollers, as well as descriptions of the machines and process, can be secured from the Office of the Publication Board, Department of Commerce, Washington 25, D. C., for $1.00 in photostat form or 50c in microfilm form. The reports consists of 8 pages.

New Pyro Surface Pyrometer

An improved Pyro Surface Pyrometer has been developed and introduced by the Pyrometer Instrument Co., 103 Lafayette St., New York 13, N. Y. Completely self-contained, portable, compact and quick-acting, it is constructed in a shock, moisture and dust-proofed shielded steel housing, making it immune to external magnetic influences. A large 4¾-inch diameter indicator with a 4-inch direct reading scale is said to offer the greatest ease yet in reading temperatures quickly and accurately. Further accuracy is achieved by an internal automatic cold end junction compensator, which is standard equipment. A choice of eight different thermocouples and two types of extension arms, all instantly interchangeable without adjustment or re-calibration, is offered.

Canadian Rubber Division Meets in Toronto on Tuesday, June 25

THE Chemical Institute of Canada will hold its 1946 Conference at the Royal York Hotel in Toronto on June 24, 25 and 26. In conjunction with that Conference, the Division of Rubber Chemistry of the Institute will hold a full day's session on Tuesday, June 25, also at the Royal York Hotel. The Division's program includes the presentation of eight technical papers, abstracts of which appear below, together with name and address of the authors, and the time of presentation. A short business session of the Division will also be held at 11:20 A. M.

In addition to the program of the Division of Rubber Chemistry, the C.I.C. Conference will also feature technical sessions devoted to biochemistry, chemical education, chemical engineering, protective coatings, pure chemistry and textiles. A Symposium on Conservation will be held, dealing with soils, wild life and water courses, and forestry. Chemical equipment, apparatus, products and appliances will be exhibited by approximately 45 leading manufacturers and suppliers, and the Atomic Energy Exhibit of the American Chemical Society will also be on display.

Special speakers will appear at the various general sessions to be held and at the scheduled luncheons and dinners. W. S. Richardson, president of the B. F. Goodrich Chemical Co., Cleveland, Ohio, will be the speaker at the luncheon to be held on Tuesday, June 25. The annual dinner of the Institute on June 25 will be followed by a dance.

Abstracts of the eight papers scheduled for presentation before the Division of Rubber Chemistry follow:

ABSTRACTS OF PAPERS

Tuesday Morning—June 25

9:00 A.M.—Synthetic Rubber Research in Canada. *E. R. Rowzee (Polymer Corp., Ltd., Sarnia, Ontario).*

The status of synthetic rubber research in Germany and the United States as of 1945 is outlined. A substantial portion of the German effort was directed toward fundamental research, while in the United States, since the beginning of the war period, the emphasis has been on development and applied research.

Before the war Canada had no synthetic rubber industry and had done little research in the field of elastomers. Today Canada is active. The present research organization in Canada is described and the program to be followed is indicated. Research is being financed at Sarnia by Polymer Corporation, and at the National Research Council Laboratories and six Canadian Universities by grants from the National Research Council. The work in the Research Council and at the Universities is directed by an Associate Committee on Synthetic Rubber Research of the National Research Council. Capital expenditures for synthetic rubber research in Canada to date approximate $350,000. The operating budget for the coming year will be in excess of $300,000.

9:40 A.M.—Elasticity of Rubber-Like Materials. *L. R. G. Treloar (British Rubber Producers' Research Association, Welwyn Garden City, Herts., England).*

The origin of elasticity in rubber-like materials is discussed from the standpoint of molecular structure. The mechanism of crystallization in rubbers and of the transition to the glassy state at low temperatures is considered. Reference is made to recent developments of the theory of elasticity, which provide a basis for working out the stress-strain properties of rubber under various types of deformation. Experimental results on rubber in elongation, compression and shear are presented.

10:20 A.M.—Rubber Derivatives and Plastic Films for Food Packaging. *H. J. Osterhof (Goodyear Tire & Rubber Co., Akron, Ohio).*

Requirements for food packaging films are discussed. The chief rubber derivatives employed for food packaging are cyclized rubber (Pliolite), used to a limited extent in moisture-proof coatings and hot melt formulations, and more paricularly, rubber hydrochloride (Pliofilm) as an all-purpose, strong, flexible, heat-sealable, self-supporting foil. Other packaging films are regenerated cellulose (Cellophane), cellulose acetate, ethyl cellulose, vinyl chloride copolymers (Vitafilm), vinylidene chloride copolymers (Saran), polyethylene, coated or film laminated aluminum foil, coated or film laminated glassine or paper. The essential physical data including advantages and disadvantages are tabulated for the available packaging films.

The chemistry of the rubber hydrochloride reaction is discussed including methods for its preparation. Attempts to prepare derivatives from synthetic rubbers are described.

Attention is directed to various interesting packaging applications with Pliofilm. For example, one-way or two-way stretched Pliofilm of thickness down to one ten-thousandths of an inch is used in packaging, particularly, of fresh fruits and vegetables whose metabolism must continue during storage. A wrapping method of packaging by thermally molding Pliofilm around irregular shaped objects has been developed. Special types of Pliofilm for special applications such as frozen food packaging have also been developed.

10:50 A.M.—Statistical Control in the Physical Testing of Rubber. *J. D. Heide (U. S. Rubber Co., New York, N. Y.).*

The test results obtained from either repetitive tests of a single unit (if repetitive tests are possible without destruction or distortion of sample) or successive tests of samples drawn from a homogeneous master sample will, under certain delineated conditions, fall into a determinable pattern usually described by a normal distribution. The standard deviation of this distribution is, by definition, the testing error of the test and gives us a valid and useful measure of the reliability of the test. Complications of sample preparation or test procedure may necessitate special methods in determining this distribution and the testing error. Some of these are described.

Knowledge of the testing error and the pattern of variation of test results furnish a scientific basis for controlling and improving test performance in the control laboratory. This improvement and control are brought about through the use of control charts. Methods of constructing control charts for various physical tests of rubber and their use for the mentioned purpose are described.

Wednesday Afternoon—June 25

2:30 P.M.—High Frequency Heating in the Rubber and Allied Industries. *G. P. Bosomworth (Firestone Tire & Rubber Co., Akron, Ohio).*

The object of the paper is to review some of the past developments and present practices in dielectric heating with particular reference to drying and vulcanizing processes. Some data will be presented on the characteristics of materials and the range of constants of the load circuits usually found in applications in the rubber industry.

Reference will be made to the problems of load handling and maintenance of equipment. The training of operating personnel and technicians will be discussed. Examples of production installations with benefits obtained will be given. Brief mention will be made of the radio interference problem and some data on field tests supplied. Desirable characteristics of generators and some practical limitations presently in effect will be indicated.

3:20 P.M.—The Development of Latex Processes in Great Britain. *E. W. Madge (Dunlop Rubber Co., Ltd., Birmingham, England).*

The paper deals with developments of special technical interest and others whose historical aspect is of importance. Some of the more unusual wartime and postwar advances in latex technology in Great Britain are also described. The subject matter is treated under the three headings of processes associated with natural latex, emulsion polymers and artificial dispersions. The inter-relationship of these materials is considered together with some of the particular problems associated with each.

4:00 P.M.—Integration of the Plastics and Rubber Industries. *R. P. Kenney (B. F. Goodrich Chemical Co., Cleveland, Ohio).*

It is shown how polyvinyls and synthetic rubber have acted as catalysts in amalgamating these two industries which in 1940 were quite distinct entities. Samples and charts are used to show just how this interchangeability or interdependence of industries has come about. After establishing the theory that the rubber and the plastics industries are so interrelated as to be no longer separate fields, the results of this joining of interests in terms of choosing the proper raw materials and engineering the end product for specific use are discussed. The economic considerations are reviewed.

4:30 P.M.—Effect of Varying Monomer Ratio and Conversion on GR-S Type Rubbers. *E. D. Maher and T. L. Davies (Polymer Corp., Ltd., Sarnia, Ontario).*

To study the effects of changing styrene content and monomer conversion on the physical properties of rubber-like butadiene-styrene copolymers, a series of samples was prepared in 5 gal. laboratory reactors using butadiene-styrene charge ratios from 50/50 to 90/10 and conversions from 50% to 90%. The plasticity of all polymers was maintained approximately constant by modifier adjustment. The polymers were compounded in a standard tread formula and evaluated at equivalent states of cure.

For a given styrene content, decreasing conversion resulted in increasing rate of cure, higher tensile, elongation and rebound and improved processibility. With increasing styrene content there was an improvement in processibility, tensile, elongation and flex resistance at the expense of lower rebound and higher brittle point.

Suggestions are made for improving standard GR-S and for the production of new butadiene-styrene copolymers for special uses.

Data on the Rate of Creep in Neoprene

A MORE accurate picture of the creep characteristics of natural rubber and neoprene has been secured by virtue of a long-time test conducted by the DuPont Rubber Laboratory, the results of which were presented by W. Newlin Keen, of that laboratory, before a recent meeting of the Rubber & Plastics Division of the American Society of Mechanical Engineers in New York City.

In the test in question, the rubber and neoprene samples were kept under continuous stress for three years and nine months. Neoprene's major deformation took place relatively early in this period and from that point on the creep rate decreased, a situation that permits the designer to make definite allowance in designing motor mounts for long-time service. Rubber on the other hand showed an acceleration of the rate of creep as the testing time was lengthened.

Furthermore, it was found that the rate of creep in neoprene could be diminished by three different procedures and that rubber compositions were somewhat less responsive to these measures. These procedures were: (1) increasing the cure or vulcanization, (2) preconditioning the neoprene compound with heat while the material is held in shear strain (diagonal stretch), and (3) changing composition of the neoprene material.

In the preconditioning process, the sample was subjected to a temperature of 158°F. for 24 hours while under a shear strain of 30 per cent and then allowed to rest for a week at room temperature before subjecting it to the long-time test.

The tests showing that it is possible to control the creep of neoprene compounds are of particular interest since they indicate that the manufacturer can now utilize the unusual versatility of neoprene with respect to resilience and vibration dampening characteristics without sacrificing creep characteristics. Natural rubber compounds display a marked tendency to high creep on those compositions having a high energy absorption.

The greater versatility of neoprene is important to the engineer because the exact degree of resilience and energy absorption of the motor mounting must depend upon the specific vibration frequencies, weight, etc., of the load to be supported. In building any vibration-dampening device the engineer takes particular care to see that no external or disturbing vibration is transmitted through the device at the same frequency as that of the natural vibration of the motor or machine. If this were to happen the resulting resonance would amplify the natural vibration to tremendous proportions and wreck the machine or the building.

Most of the motor mounts themselves are constructed on the sandwich principle, the resilient filling being firmly bonded to two or more pieces of metal. In shear-type mountings the sandwich stands on edge, with one or more metal pieces firmly attached to the motor and the other to the frame of the car. The weight of the motor thus places the rubber in shear stress, which provides a soft, springy vertical suspension while at the same time giving stability in other directions.

Editorials . . . . . .

Name for Synthetic

THE future of synthetic rubber was the subject of an address given by R. S. Wilson, vice-president of the Goodyear Tire & Rubber Co., before the 1946 Spring Safety and Fire Conference of the Office of Rubber Reserve, Reconstruction Finance Corporation, at Detroit earlier this month. Some of the pertinent comments made by Mr. Wilson in that address appear elsewhere in this issue. Aside from his comments on the future of synthetic rubber, the Goodyear executive also raised an interesting question which merits the consideration of the entire rubber manufacturing fraternity, namely, since synthetic rubber is here to stay why don't we give it a name?

The rubber manufacturing industry is in general agreement, as Mr. Wilson pointed out in his talk, that the term "synthetic rubber" is both clumsy and technically inaccurate, and that "the time has come to baptize it, christen it, make it a legitimate member of the great American industrial family." It is reasonable to assume that the development of synthetic rubber in the next twenty-five years may parallel the history of rayon. Discovered in the 1880's, commercial production of rayon, then termed artificial silk, was started about 1891. Its production increased steadily, but not spectacularly, until 1924 when the term "artificial silk" was dropped in favor of "rayon" and since that time production has grown by leaps and bounds.

Taking all extenuating circumstances into consideration, Mr. Wilson argues that the phenomenal growth of rayon, once it was taken out of the "artificial" or "substitute" class, is due to the fact that it is capable of infinite variety, while silk, the natural substance, is more or less unchangeable. The point to be emphasized is that as an "artificial" material, treated more-or-less solely as a substitute for silk, the growth of rayon was stymied, but as a true synthetic, proudly bearing its own name without the stigma of being another just-as-good material, it came into its own In a similar sense synthetic rubber dignified with a name of its own and set up as a substance in its own right would come to be regarded as a permanent material and not merely as a stop-gap, and its production and use would profit accordingly.

Mr. Wilson correctly points out that the job of finding a name for synthetic rubber will never get done unless somebody accepts the responsibility of doing it. He recommends that the Office of Rubber Reserve establish a committee which would work closely with the Division of Rubber Chemistry, A.C.S., and the Public Relations Division of the Rubber Manufacturers Association. Further, that the committee finally select five potential names which would be submitted to the directors of the R.M.A. who would select the final name.

The idea of selecting a suitable name for synthetic rubber has merit. Although no special committee of the type suggested by Mr. Wilson has been named, some action along these lines should be taken. Readers are invited to submit their own ideas as to a proper name, which should and must be short and phonetic. We will publish these names as submitted, if it is deemed desirable, and will see to it that they are presented before any special nomenclature committee eventually named by any govermental, industrial or commercial organization to treat with the problem.

Tire Price War Coming

THE bane of tire merchandising executives in the prewar era was the periodic price wars which erupted whenever production overshadowed distribution. Unfortunately, there are already signs to indicate that such a condition is once again in the offing, and tire price wars may be with us shortly. Already, slashes of 10 to 20% below OPA ceilings have been reported on large-size truck tires in the New York and Chicago areas. The passenger car tire situation is still tight and accordingly prices are holding steady for such tires. The havoc played with automobile production by strikes, shortages, etc., however, is even easing up that situation. The fault, if such it can be called, lies of course in the greatly expanded tire production facilities which came into being during the war. If future price wars are to be avoided one of two things must happen: Markets must be expanded or production facilities must be curbed.

CURRENT NEWS OF THE MONTH

RESTRICT USE OF NATURAL RUBBER CREPE; CURTAIL THE EXPERIMENTAL USE OF BUTYL

GOVERNMENTAL activity in the rubber manufacturing field in the past few weeks has been marked by orders restricting the use of pale crepe natural rubber and curtailing the amount of Butyl rubber which may be used for experimental purposes. Taking recognition of tightening conditions in the components field, the Rubber Division of the Civilian Production Administration has taken steps to alleviate such conditions. Tire production, despite the textile situation, which remains tight, is showing appreciable increases, and the industry will probable meet its goal of 66,000,000 passenger car units this year. Natural rubber is arriving in increasing quantities, but shipments are still far from satisfactory. Several price changes have been announced by the Office of Price Administration.

The use of pale crepe natural rubber, of both thin and thick types, was restricted to specific medical articles and to products which come in contact with food. This action is covered by Direction 13 to Rubber Order R-1 issued on April 22. Pale crepe natural rubber has not been received in the United States in the last four years and none is expected in the current year. Lists of products for which pale crepe rubber will be allowed follow (unless otherwise noted, allowances are for minimum quantities required by the manufacturer):

Thin type only: Dental dams, denture rubber, breast shields (nursing), small feeding nipples, colostomy outfits, dilators, inhalation bags and face pieces, prostatic bags, prosthetic devices, stoppers (medical, surgical, dental, veterinary and mortuary types only; not more than 50 per cent of natural rubber used may be thin pale crepe), vaccine caps, pessaries and prophylactics, tubes and tubing (blood plasma, intravenous and multiple lumen only).

Thick type only: Refrigerator door gaskets, surgical tape and cohesive bandage (15 per cent), feeding bottle caps and covers, large breast-type feeding nipples. In addition, permission may be granted after appeal to CPA for use of thick pale crepe rubber in lathe cut jar rings for home canning, and in rubber hydrochloride and cyclo-rubber for food packaging.

Experimental Use of Butyl

The amount of Butyl rubber which may be used monthly for experimental purposes by each manufacturer without specific authorization from the CPA Rubber Bureau has been reduced from 200 to 25 pounds. This reduction is covered by Amendment No. 1 to Rubber Order R-1, as Amended March 1, 1946. Issued on April 19, the amendment also prohibits the use of natural rubber in the manufacture of sponge play balls. It also corrects an omission made in issuing the latest R-1 Order by inserting an allowance of 3 per cent of natural rubber for industrial vacuum hose.

Reactivate Materials Staff

Reactivation of the Component Materials Staff and expansion of its Technical Operations Bureau was announced by the CPA Rubber Bureau on May 7. The Component Materials Staff, which will translate rubber manufacturing production schedules into component requirements, will be headed by W. R. Lantz, who served with the WPB Rubber Bureau last year and who is on loan from the B. F. Goodrich Company. This staff will maintain liaison with other divisions of CPA and with other government agencies. Mr. Lantz will be assisted by Harry D. Brown, temporarily delegated to CPA by the Office of Rubber Reserve. Mr. Brown is on leave of absence from the Gates Rubber Company.

Frederick G. Reinke, who worked closely with government rubber officials while serving as a major in the Army's rubber conservation program, will assist the Technical Operations Branch in planning the reconversion of the rubber manufacturing industry. He will specialize in the distribution of natural rubber to manufacturers of industrial rubber products.

Also in the Branch will be F. P. Hartung, an expert in tire development and in molded and extruded rubber goods. He formerly managed the new products development department of the Ohio Rubber Co., Willoughby, Ohio, and also served as plant manager of the Virginia Rubatex Division, Great American Industries, Inc., Bedford, Va.

First Quarter Tire Production

According to figures issued by the CPA Rubber Division on May 9, a total of 14,650,805 passenger car and motorcycle tires and 3,860,609 truck and bus tires were produced in the United States during the first quarter of the current year. This is a substantial increase over the last quarter of 1945 and an outstanding example of reconversion. During the quarter, 87 per cent of the passenger and motorcycle tires went for civilian replacements and 8 per cent to new vehicles. First quarter production of these tires was almost three times as high as it was in the same quarter of 1945.

In connection with these figures, W. James Sears, Director of the CPA Rubber Division, pointed out that the average weekly production rate of passenger car and motorcycle tires during April, based on preliminary reports, would indicate a yearly output of just over 66,000,000 tires, which is the industry's objective for 1946.

During the first quarter of 1946, tractor and implement tire production increased by 32 per cent over the previous quarter, from 912,637 to 1,205,013. It was pointed out that in this field production has filled most of the old and new demand so that some decrease in production is probable. Seasonal demand varies greatly in these classes of tires. Figures on over-all tire production for the first quarter of 1946 appear in the table published in connection with this report.

Textile Situation Still Tight

Despite the encouraging increase in tire production, the textile situation still remains tight. Continuation of textile shortages is keeping most rubber manufacturers on a hand-to-mouth basis of operation despite recent government set-asides designed to move hard-to-find cotton fabrics into the hands of industrial users.

According to the latest survey made by the Rubber Manufacturers Association, results of which were released on May 13, slight improvement is evident in some types of fabrics as compared with the situation six to eight weeks ago at which time many manufacturers had been unable to obtain as much as a yard of their second quarter fabric requirements and were threatened with shut-downs.

Rubber manufacturers cited as principal reasons for their inability to obtain fabrics vital to their own factory operations the claims of textile mill operators that they have been confused by CPA orders affecting the distribution of goods under present OPA ceilings. Several rubber manufacturers cited the fact that some cotton mills have diverted their production to more profitable constructions, while others blamed reduced cotton mill production. Labor shortages, scarcity of coal and starch, and heavy set-asides for

export and the bag trade were other reasons given for the tight cotton goods situation.

Scarcities have been felt most acutely by manufacturers of friction tape and coated materials. As one of the major users of broad woven fabrics, coaters reported extremely short supplies of all types of cloth. For example, only two out of 22 reporting companies have been able to obtain more than 50 per cent of their second quarter sheeting requirements. Others report having obtained up to 50 per cent, but in most cases less, of their requirements in print cloths, sateens and drills and twills. Osnaburgs were reported by this group as in somewhat easier but still not adequate supply.

Sheetings continue tight straight across the board. Manufacturers of tires, mechanical rubber goods and rubber footwear report little improvement in supplies of sheeting in the past month. Most users found some improvement, however, in supplies of osnaburgs, belt and hose duck, enameling ducks and chafer fabrics.

The survey showed that the threat of rubber plant shutdowns, an immediate reality in April, had receded slightly. The Association noted, however, that both shipments and over-all inventory continue so low that forward scheduling of production is almost impossible and that any material lessening of supplies would still bring serious interruptions of operations.

One of the latest steps taken by OPA to relieve the situation was the granting of a 5 per cent incentive premium to producers of combed and carded yarns, tire cords, etc. This was covered in Amendment No. 21 to Supplementary Order 131. This premium covers yarns made in compliance with the production requirements of the Civilian Production Administration.

According to the Bureau of the Census, cotton tire cord and fabric production during the first quarter of 1945 reached 71,000,000 pounds, an increase of 5 per cent over the third quarter of that year. The 282,000,000 pounds produced in 1945 was 6 per cent above 1944 production. Although the production of rayon and nylon tire cord in the fourth quarter of 1945 was less than in the third quarter, total production for 1945 amounted to 187,000,000 pounds, a 61 per cent increase over the 117,000,000 produced in 1944.

Natural Rubber Situation

According to a report issued by the U. S. Department of Commerce, little natural rubber is moving in quantity from Sumatra other than sizable amounts which are being smuggled across to Singapore. Original plans for the rehabilitation of rubber production in Sumatra for 150,000 tons output this year are not likely to be realized.

Estimates of the amount of rubber available in Sumatra vary considerably, the Department stated. Early 1946 reports indicated that 65,000 tons were stored on the Island, of which 43,000 tons were in the East Coast Residency. In view of the increasing amounts reported moving across the Malacca Straits in native craft, stocks are probably well below these figures.

Production in Malaya is reported to be improving slightly, although the labor situation is still acute. The purchase of all available rubber from Malaya is now in the hands of the Rubber Directorate of the British Board of Trade. Purchases will be made through the Rubber Trade Association of London and shipments will be made in line with allocations of the Combined Rubber Committee which has its headquarters in Washington. Heretofore purchases were made by a special purchasing unit.

The British Board of Trade is paying one shilling a pound for Malayan rubber as compared with the previous price of ten pence. This price is in line with the 20¼c per pound which the United States pays for the same rubber. These prices will continue in effect until June 30 when the present agreement on the price of rubber between the United States and Great Britain expires.

New Price Regulations Issued

Included among new price controls and regulations issued by the Office of Price Administration in recent weeks were the following:

Mechanical Goods: Increases in manufacturers' ceiling prices for rubber hose, belting and packing, ranging from 12 to 26 per cent, and for hard rubber battery containers, covers and vents, approximating 15 per cent, were provided in Amendment No. 27 to M.P.R. 149 (Mechanical Rubber Goods), issued on April 8. The amendment also permits manufacturers of molded, extruded, lathe-cut and chemically blown sponge rubber products to raise their ceilings up to 15 per cent on "standard list" items. Amendment No. 28 to this order, issued on April 12, established a method for setting prices which cannot be determined under terms of the original order.

Scrap Rubber: Dollar-and-cent ceiling prices were established for sales of "black carcass" scrap rubber by scrap dealers to rubber reclaimers in Amendment No. 14 to R.P.S. 87 (Scrap Rubber). The ceilings, effective May 6, are $40 per short ton delivered in Los Angeles and $50 delivered to other consuming centers. These ceilings bear a normal relationship to previous ceilings for grey carcass scrap rubber.

Heels and Soles: Amendment No. 17 to M.P.R. 477 (Sales of Rubber Heels and Soles in the Shoe Factory and Home Replacement Trades) makes the meaning originally intended for composition nail-on half-soles clearer by expressly providing that the dollar-and-cent maximum prices for these soles established by Appendix C for sales in the home replacement trade apply only to special competitive grade half-soles. The amendment was issued on May 8 and was effective May 13.

Bicycle Tires: Prices for sales of Pharis "motorbike" tires, sixe 24 x 2.25, to various classes of trade were set in Amendment No. 12 to M.P.R. 435 (New Bicycle Tires and Tubes), issued on May 9 and effective May 14. Another minor change was made by the amendment.

Footwear: Dollar-and-cent ceiling prices for twenty additional types of men's and women's surplus rubber footwear offered by the government to civilians were established in Revised Order No. 91 to Supplementary Order 94 (Rubber Footwear), effective April 18. The revised order also exempts certain types of footwear from price control, including all used rubber and canvas footwear. Wholesalers' dollar-and-cent ceiling prices for waterproof rubber footwear were increased 10 per cent by Amendment No. 6 to R.M.P.R. 229 (Retail and Wholesale Prices for Rubber Footwear).

Coated Fabrics: Converters of coated and combined fabrics were granted an increase of approximately 7 per cent in their ceiling prices by Amendment No. 13 to M.P.R. 478 (Coated and Combined Fabrics). The new prices, effective May 14, were authorized to cover recent advances in prices for the base textile materials used in making these fabrics.

Bathing Caps: Two new methods for establishing prices on bathing caps, which supplant any previous method or ceiling established for such caps other than two basic types, were provided in Revised Order No. 117 to M.P.R. 220 (Certain Rubber Commodities). The revised order also establishes a procedure for manufacturers to determine the ceiling price of wholesalers and retailers for bathing caps other than the two basic types. Incidentally, a revised version of M.P.R. 220, including Amendments 1 to 27, was issued on April 19.

TIRE PRODUCTION: FIRST QUARTER, 1946

(As Compiled by CPA Rubber Division)

Type of tires	First quarter 1946	Fourth quarter 1945	% of change
Airplane	46,204	48,743	— 5%
Truck and bus	3,860,609	3,096,826	+25%
Tractor and Implement	1,205,013	912,637	+32%
Solids	232,395	260,052	—11%
Industrial Pneumatics	220,559	188,513	+17%
Passenger and Motorcycle	14,650,805	11,144,856	+32%
Bicycle	2,030,412	1,693,188	+20%
Camelback (long tons)	14,706	26,999	+46%

WILSON, OF GOODYEAR, PREDICTS BRIGHT PROMISE FOR SYNTHETIC

The forecast that development of synthetic rubber during the next twenty-five years would be comparable to that of rayon was made in Detroit, Mich., on May 13, by R. S. Wilson, vice-president of the Goodyear Tire & Rubber Co., in an address before the Spring Safety Conference of the Office of Rubber Reserve, Reconstruction Finance Corporation. Rayon production, he pointed out, has increased from 30,000,000 pounds in 1923 to an estimated one billion pounds in 1946.

Mr. Wilson, last of the national rubber directors during the war, spoke on "The Future of Synthetic Rubber." He urged the rubber industry, through the Rubber Manufacturers Association, to decide upon a generic term to displace "synthetic rubber," on grounds that the latter appellation carries an implication of inferiority in the public mind no longer applicable to the substance.

Further, he urged that America take steps to assure a minimum supply of 100,000 tons of natural rubber a year by development of plantations in the western hemisphere, preferably in Central America. Mr. Wilson said: "It is perfectly possible to develop in 10 years time a planted area in Central America capable of producing 100,000 tons of natural rubber annually at maturity. With synthetic rubber and 100,000 tons of natural rubber per year in Central America, the United States will be absolutely and totally independent for rubber for the first time in our history."

Speaking on synthetic rubber's future and the importance of selecting a more appropriate name for the substance, after outlining rayon's phenomenal growth, Mr. Wilson said: "Is it not reasonable to assume that the next 25 years will find a similar development in synthetic rubber? But, as artificial rubber—or substitute rubber—or not-quite-so-good rubber, certainly it hasn't as good a chance as it would have if it were dignified with a name of its own and set up as a substance in its own right—a substance that both the original manufacturer and the fabricator would take pride in working with—would regard as permanent and not as a stopgap.

"I suggest that a committee of this group be appointed to recommend a name. I suggest that the committee thus appointed work very closely with the rubber division of the American Chemical Society and the public relations division of the Rubber Manufacturers Association. I suggest that the committee recommend not more than five names to the directors of the Rubber Manufacturers Association, who shall select the final name."

In concluding his address, Mr. Wilson advocated extreme caution in shifting the production of synthetic rubber from government to private control because of the important element of national security involved, rubber being essential to the national defense.

Coming Events

May 24. Chicago Rubber Group, Hotel Morrison, Chicago, Ill.

June 5. Buffalo Rubber and Ontario Rubber Groups, Joint Meeting, Hotel General Brock, Niagara Falls, Ontario.

June 7. Philadelphia Rubber Group, Annual Outing. (Tentative).

June 20. Quebec Rubber & Plastics Group, Golf Tournament, Summerlea Golf Club, Montreal, Canada.

June 21. New York Rubber Group, Outing, Blasberg's Grove, Hawthorne, N. J.

June 21. Akron Rubber Group, Outing, Seiberling Country Club, Akron.

June 21. Rhode Island Rubber Club, Outing, Wannamoisett Country Club, Providence, R. I.

June 24-28. A.S.T.M., 49th Annual Meeting, Buffalo, N. Y.

June 25. Rubber Division, Chemical Institute of Canada, Royal York Hotel, Toronto, Canada.

Sept. 8-15. American Chemical Society, Chicago, Ill.

Oct. 7-12. 34th National Safety Congress, Chicago, Ill.

Canfield Elects Officers

H. O. Canfield Co., Bridgeport, Conn., has announced the election of new officers, including Hans Wyman, president; Charles A. Wyman, executive vice-president in charge of all operations including manufacturing and sales, and John F. Dunnigan, vice-president. H. J. Donnelly, formerly president of the company, has been elected chairman of the board. Prior to his appointment as executive vice-president, Charles A. Wyman was president of Universal Plastics Corp. and assistant vice-president of Eversharp, Inc. Mr. Dunnigan was previously treasurer of Universal Plastics Corp. and controller of General Aircraft Corp.

Lake Shore Promotes Two

Lake Shore Tire & Rubber Co., Des Moines, Iowa, has announced the election of Charles K. Novotny, factory manager, as vice-president of the company. Mr. Novotny will continue as factory manager of the organization in addition to his new duties. It was also announced that William C. Waggoner, comptroller of the company, has been elected treasurer. Mr. Novotny is a graduate of Oberlin College and holds a masters degree in chemical engineering. Before joining Lake Shore in 1945, he was associated with the Firestone Tire & Rubber Co., and the Mansfield Tire & Rubber Co.

FIND SUPERIOR RUBBER TREES IN UPPER VALLEY OF AMAZON

Rubber trees of apparently much greater productivity and disease resistance have been found by members of the Agricultural Research Administration of the United States Department of Agriculture and the Ministries of Agriculture of Colombia and Peru in the upper regions of the Amazon valley. Some of these outstanding trees promise, after testing, to prove better than the best of the plantation trees.

For three years two plant specialists of the Department's Agricultural Research Administration—Richard Evans Schultes in Colombia and Russell J. Seibert in Peru—have been exploring the wild region of the upper Amazon in Colombia and Peru. This part of the valley has long been known to grow higher yielding forms of the Para rubber tree than the alluvial areas 2,000 miles downstream. By following the native rubber gatherers and taking advantage of their knowledge of the best "milkers," the two Americans have brought back budwood from the most promising trees for testing in plantation nurseries at Tinga Maria, Iquito and Iberia, all in Peru; Belem, Brazil; Turrialba, Costa Rica; and Leticia, Colombia.

Altogether they have located a hundred or more trees that apparently combine the characteristics of high yield and resistance to leaf blight, and the best of these are expected to provide propagation material for highly productive plantations. This golden opportunity for finding the best of the wild *Hevea brasiliensis* was the result of wartime demand which made it profitable to harvest latex from wild trees scattered over great areas.

Dr. R. D. Rands, of the Bureau of Plant Industry, Soils, and Agriculture, states the United States and South American scientists have noted the characteristics of trees from which latex is harvested, particularly such factors as yield in comparison with size of tree and freedom from leaf blight disease. They sometimes even harvest budwood by shooting twigs out of the tops of the tall, wide-crowned trees with a rifle. The scientists must give the cuttings good care and get them under propagating conditions as soon as possible, he added.

Hevea brasiliensis is extremely variable in yield, especially in the up-river valley, according to Dr. Rands. Because of this variability there is great opportunity for developing high producing plantations through propagation from selected cuttings with disease-resistance and high yield factors. In the field the trees grow from cuttings to producing age in about four years, by which time they are approximately 18 inches in girth. Then critical tappings will determine to what extent the fine performance of the jungle parents is reproduced in the bud-grafted offspring. If 10 per cent of the jungle selections prove really superior a great advance will have been made.

FIRST PLASTICS EXPOSITION ATTRACTS CROWD OF 87,500

The First National Plastics Exposition, held at the Grand Central Palace in New York City from April 22 to 27, under the auspices of the Society of the Plastics Industry, was a marked success. Open only to the trade on the first three days and to the general public at an admission cost of $1.00 for the last three days, the exposition attracted a total estimated attendance of 87,500. Estimated attendance during the three trade show days was over the 50,000 mark. More than 200 exhibitors displayed plastic materials, machinery for molding, fabricating and laminating these materials, and a wide range of finished plastic products.

The Annual Conference of the S.P.I. was held at the Hotel Commodore concurrently with the exposition, technical sessions being held on Tuesday, Wednesday and Thursday, April 23, 24 and 25. Special papers on and forums covering compression molding, extrusion, injection molding, low pressure molding, and other subjects were featured at these sessions. The annual John Wesley Hyatt Award for the advancement of plastics was presented to Virgil E. Meharg, superintendent of development of the Bakelite Corp., Bound Brook, N. J., and Paul D. Zottu, consulting electronics engineer of Newton, Mass., at the annual dinner of the Society, held at the Commodore on Wednesday, April 24.

Although most of the exhibits were of direct interest to the plastics trade, a number of them contained materials and machinery and equipment of equal interest to the rubber manufacturing field. For example, the complete line of Geon resins was exhibited by the B. F. Goodrich Chemical Co., this exhibit including a live horse equipped with saddle, lariat and other trappings made of Geon. This booth also featured samples of Kriston, the new thermosetting casting plastic recently introduced by the company. The virtues of Koroseal were emphasized by the parent Goodrich company in another booth.

Six new plastics developments were displayed for the first time in the DuPont booth, including nylon plastic sheeting which, because of toughness, is expected to provide outstanding durability in leather-like applications, and "Teflon," a tetrafluoroethylene resin, reported to withstand all acids and which retains its form and strength at a higher temperature than any known organic material.

New Developments by Naugatuck

Several new developments were also featured in the booth of Naugatuck Chemical. These included "Kandar," a textile treating resin which imparts a crispness to cotton fabrics eliminating the necessity for starch in such garments as women's house dresses; "Vibrin," a new contact resin for laminating with glass or textile fabrics at low temperature and pressure; and "Kotol," a strippable protective coating made of plastic.

Vinyl films and materials were featured by several companies, including the Pantasote Corporation of New Jersey, which displayed plastic shoes, handbags, trimmings, and hats made of "Pantex," its new vinyl film without a fabric base. This material is embossed in grains, such as alligator and lizard, and is easily tailored, according to the company. "Elastron," a flexible plastic of the polyvinyl family, available in an infinite variety of colors from purest white to jet black, was exhibited by the Industrial Synthetics Corporation.

New cloths specifically adapted to laminating and plastic coating, said to be the first to be developed without starch sizing, were shown by the Riverside & Dan River Cotton Mills, Inc. Cloth of this type is reported to have high tensile and bonding strengths, good dielectric properties, and laminates made from it show high impact strength.

Chemicals of all types for the processing of plastic materials were in evidence on all sides, particularly plasticizers and softeners. Companies exhibiting such products included Hercules Powder, Dow Chemical, Reichhold Chemicals, Rohm & Haas, and American Cyanamid. Colddip plastic dyes, some of which find application in connection with rubber latex products, were displayed by the Schwartz Chemical Co.

Many new developments in the field of machinery and equipment were shown, including a new electronic metal detector by the Radio Corporation of America, which inspects for metal particles in plastics, rubber, paper, textiles, and other products. Numerous molding, injection and transfer presses were both displayed and operated, including a new 50-ton hydraulic completely automatic molding press by the F. J. Stokes Machine Co.

The increased interest in and use of high frequency preheating in the plastics field was indicated by the number and variety of equipment of this nature exhibited. Among those displaying such equipment, several of it shown for the first time at the exposition, were General Electric, W. T. LaRose & Associates, Raytheon Manufacturing, Illinois Tool Works, Airtronics Manufacturing, and the Radio Receptor Co.

Kabrich Joins Flintkote

Brigadier General W. C. Kabrich, recently retired from the United States Army after nearly thirty years of service, has joined the Flintkote Co. as assistant director of research. He will be stationed at the company's laboratory in East Rutherford, N. J. During World War II, as Chief of the Technical Division, Office of the Chief of Chemical Warfare Service of the War Department, General Kabrich directed the research, development, engineering for production and actual initial procurement of all chemical warfare supplies for the United States Army.

Products Exposition Postponed

Due to the uncertainty of products and delivery schedules of vast numbers of the nation's leading manufacturers, the Products of Tomorrow Exposition, scheduled to open at the Chicago Coliseum on April 27, has been indefinitely postponed. It is expected that the exposition may be given by the fall of this year or held over to early in 1947.

The Naugatuck Chemical booth at the First National Plastics Exposition

MILITARY GOVERNMENT DESCRIBES INDUSTRY IN OCCUPIED NATIONS

The post-war rubber industry in Germany and Japan is covered in a report, issued last month by the Military Government Branch of the United States War Department, which also describes the conditions of numerous other industries in those two countries.

In the United States Zone of Occupation in Germany, according to the report, the rubber plants are at present operating to the fullest extent permitted by the amounts of raw materials available. Main stress is being placed on the manufacture of automobile and truck tires and tubes in sizes critically short.

The Buna shortage, however, remains acute. Of the 325 tons due in January, none has as yet been made available by the Ludwigshafen plant, though some shipments are expected shortly, the report states.

One-half of the conveyor belting on order for the Saar coal mines has been fabricated, leaving a balance of 6,000 meters to be completed. Output of rubber soles, heels and boots, and of miscellaneous industrial rubber items, showed a substantial increase in January over December.

The manufacture of critical rubber items in Japan is now proceeding on the basis of two officially-approved allotments of 6,000 metric tons of crude rubber from military stocks and of 1,590 tons from civilian stocks, the report says. Due to the shortage of other raw materials, particularly gasoline and benzol as solvents and of coal as fuel, it is expected that little more than 50 per cent of production schedule plans will be realized for such consumer goods as rubber-soled socks, shoes and boots, passenger car casings and tubes, bicycle tires, belting, hose, rubber fabric, rice mill rolls, and surgical goods.

The report reveals that during the war the synthetic rubber industry in Japan was devoted entirely to military uses; 95 per cent was used in the production of self-sealing gas tanks for aircraft. Though the annual capacity of the synthetic rubber industry was 750 metric tons, actual production did not rise above the 220 tons reached in 1944. The industry is not operating today, since production costs of 100,000 yen per ton are prohibitive.

Thiokol to Build New Plant

At the annual meeting of stockholders of the Thiokol Corp., held in Trenton, N. J., on April 18, it was revealed that plans have been developed for the erection of buildings and installation of equipment upon land recently acquired by the company on the Raritan River in New Brunswick, N. J. The new buildings will enable the company to engage in the manufacture of one of its raw materials. Officers of the company were re-elected at the meeting.

Prices and Statistics

A completely revised and greatly expanded section devoted to current market prices of rubber chemicals and compounding ingredients appears in this issue of RUBBER AGE, beginning on Page 230. A good deal of thought and effort has been put into the preparation of this section and it is our intention to keep it accurate and up-to-date. The cooperation of all suppliers is invited to help us accomplish this aim. In addition, our next issue will see the reappearance of the section devoted to statistics of direct interest to the rubber manufacturing field, which was a pre-war feature of RUBBER AGE. Until the paper situation improves sufficiently, the Chemical Market and Statistical Sections will appear alternately.

Develops New Type of Tape

A new kind of tape made by coating Fibreglas with Silastic, the Dow-Corning silicone rubber, has been developed by the Connecticut Hard Rubber Co., New Haven, Conn. Marketed under the trade name of "Cohrlastic," the new tape is said to have wide application in the electrical field because of its high dielectric properties, 1100 volts per mil, and the capacity to retain this strength at temperatures up to 500° F. and not break down and carbonize. It is reported resistant to arcing and corona cutting, waterproof and water repellent. The new product is available in rolls of various lengths and thicknesses. Tapes of .010 and .015 are being used as an insulating wrap for underground cables, particularly on "hot spots."

Represent Naugatuck Chemical

Albert J. Marshall and Clarence H. Sigler have been appointed technical representatives for Dispersions Process, Inc., and the Naugatuck Chemical Division of the U. S. Rubber Co., specializing in latex, Lotol, and rubber dispersions. Mr. Marshall will make his headquarters at 31 North Summit St., Akron, and cover Cincinnati, Dayton, Columbus, Indianapolis and other cities in the central sales area, while Mr. Sigler will make his headquarters in Detroit, Mich., and handle sales in the northern area.

Martin Expanding Plant

Expansion of the Martin Rubber Co., Long Branch, N. J., has started with the construction of a new shipping department. The company is also planning to build a modern testing laboratory. The company now employs 150 workers, on three shifts, and expects to employ close to 300 in the near future.

SMITH REVEALS 1945 VALUE OF U. S. RUBBER PRODUCTION

In a speech at a recent stockholders meeting of the U. S. Rubber Co., Herbert E. Smith, president, revealed that the total value of production in 1945 in more than 40 plants either owned or operated by the company throughout the world was more than $781,000,000. Of this amount, consolidated net sales from company-owned plants accounted for $471,506,473, a new high. More than $310,000,000 worth of goods were produced in government-owned plants. Net income after all charges was $13,024,778, or 2.5 per cent of sales after excluding $1,250,000 of income by reversal of reserve created in 1943.

During 1945 the company produced more than 162,000 tons of GR-S, Mr. Smith stated, and developed 45 new varieties of synthetic rubber, all on a production basis. The company's production of GR-S from the inception of the government's program in 1942 through 1945 totaled more than 374,000 tons, the largest output of any company.

Reviewing operations in the five-year war period from 1941 through 1945, Mr. Smith reported that the company produced $1,249,750,508 worth of goods in government-owned plants for which the company received revenue of $27,611,580, before Federal income taxes, or 2.21 per cent of the production value. Included in this output were 4,614,000,000 rounds of .30 and .50 caliber ammunition. Of the 100,000 employees who worked in the munitions plants, not one lost his life in a fire or explosion.

Sales for the company's own plants during the war period amounted to $1,943,192,634, Mr. Smith declared. Profit was equal to 3⅓ cents out of each dollar, which compares with five cents in the preceding five-year peace period of 1936 through 1940.

Dill Consolidates with Witco

The Marshall Dill organization of San Francisco, Calif., has consolidated with the Pacific Coast activities of the Witco Chemical Co., New York 17, N. Y. Established in 1900 as a sales organization covering the western part of the United States for domestic and foreign manufacturers, Marshall Dill during the intervening years has developed extensive export and import business. The Dill organization has offices and warehouses in San Francisco and Los Angeles, with additional outlets in Portland, Ore., Spokane, and Seattle, Wash., and Denver, Colo. Mr. Dill has been elected a vice-president of the Witco concern, in charge of the California division.

Cords Ltd. Moves Office

Cords Ltd., Inc., manufacturers of insulated wire and molded specialties, has moved its office to 780 Frelinghuysen Ave., Newark 5, N. J. The new telephone number is BIgelow 8-4806. Arthur Brownstein is president of the company.

REPORT ON RUBBER INDUSTRY ISSUED BY STANDARD & POOR

A report on the rubber industry, which presents the earning prospects of the industry as a whole, analyzes the financial prospects of eleven individual companies and discusses the factors involved in the future use of natural, synthetic and reclaimed rubber, has been made available by Standard & Poor's Corp., 345 Hudson St., New York 14, N. Y.

Discussing new earnings peaks in prospect, the report says that because a large portion of military business was closely allied with normal lines, rubber companies emerged from the war in an enviable position with regard to physical reconversion, the slump in operations being measured in weeks rather than the months encountered by such other war suppliers as the automobile manufacturers.

Although profit margins over the near term may be under some pressure from OPA ceiling prices on finished goods, unless relief is granted, it is predicted that substantial offsets to higher labor costs should be available through the economies of large scale output, technological advances, and the introduction of new machinery, as well as through increased productivity as skilled operators return to the plants. On this basis, peacetime sales for at least the next two years are expected to be translated into new record profits for many companies in the industry, accompanied by more liberal dividends.

Viewing the longer term outlook, the report asserts that once the initial buying spree has spent itself and deferred demand has been filled, sales of tires and tubes will again be subject to wide cyclical fluctuations. Moreover, as soon as demand slumps, the problem of overcapacity, which has been intensified by wartime addition to facilities, will probably become acute. Thus, a possibility is presented that the adverse effect of lower sales on earnings will be aggravated by a recurrence of the disastrous price wars characteristic of the industry in the past. On the other hand, a greater degree of stability is forecast by the trend toward diversification of rubber company operations and by the existence of a large domestic synthetic rubber industry.

Position of Natural Rubber

It is pointed out in the report that natural crude will probably have a competitive advantage over synthetic rubber once large-scale production is attained. This is predicated on an estimated price of around 15 to 16 cents a pound for general purpose synthetic rubber, which would reflect the elimination of high cost plants but would make allowances for amortization and some profits to the producer. Further price reductions are held possible as a result of research and increased experience in the field.

No forecasts of future natural rubber prices were attempted, but the report points out that costs in the past ranged from 8 to 10 cents a pound and further presents estimates of the *London Economist* that improved methods may permit future prices of 6⅞ to 8¼ cents a pound.

Discussing tire sales, the report says that before the war the production of automotive tires was the largest single source of revenue for the industry. During the four years 1938-1941, sales of tires and tire sundries accounted for an average of 58 per cent of the dollar value of all manufactured rubber products, replacement tire sales accounting for approximately 60 per cent of total unit value. Strict government control during the war held replacement tire sales at extremely low levels. Only 4,700,000 passenger car size tires were released for distribution in 1942. Despite subsequent improvements, shipments were still depressed.

The report suggests that the resultant accumulated demand of tires in the replacement market this year can be met only if supplies are available to the manufacturer. This, in turn, will depend to a large extent on requirements for original equipment; total production of passenger car and truck tires is expected to approximate 80,000,000 units. It is believed that replacement shipments will continue at peak levels at least through 1947. However, once all deferred demand has been filled and stocks built up a sharp slump is indicated.

Contrary to the long-term outlook for the tire business, the report predicts bright growth prospects for other types of rubber products. Mechanical rubber goods, including such major items as conveyor belting, transmission belting, and air, water and other hose, are expected to offer the greatest field for development, as volume here will move in line with industrial expansion. It is indicated that the synthetic rubber program should provide an important stimulus, since certain types of synthetic rubber will prove superior to the natural product in industrial applications.

In the presentation of the relative position of companies in the rubber industry, the report states that some of the smaller organizations may be able to strengthen their relative positions under boom demand conditions in early future years, but that this improvement will probably prove temporary, since, under normal conditions, it is extremely difficult for them to compete on a price basis. Although these concerns as a group are classified as marginal concerns, some manufacturers of specialty lines and organizations that have been successful in building up a quality name for their products are cited as exceptions. Important among the latter are the Dayton Rubber Manufacturing Co., the General Tire & Rubber Co., and the Lee Rubber & Tire Co.

Form Plabell Rubber Co.

Plabell Rubber Products Co., 864 Spitzer Building, Toledo 4, Ohio, has been formed to engage in the manufacture of plastic and rubber products and rubber machinery. The new company's plant, which is nearing completion, consists of 5,400 square feet of floor space with an additional 25,000 square feet available for expansion purposes. Officers of the company are A. B. Bellg, president and treasurer, and Ivan E. Bankey, secretary. Albert M. Place, who will serve as general manager and engineer, was formerly associated with the Western Rubber Co., the Metamora Rubber Co., and was manager of the rubber division of the DeVilbiss Co.

NEW DUPONT BRANCH HEADQUARTERS IN AKRON NEARING COMPLETION

The new building at 40 East Buchtel Ave., corner of High St., in Akron, which will house branch headquarters of the Rubber Chemicals Division of E. I. du Pont de Nemours & Co., Inc., is rapidly nearing completion. The architect's drawing above shows the structure which provides for a completely equipped, modern technical service laboratory in addition to sales offices and emergency warehouse facilities. The sales force in the Akron area, under Harry A. Hoffman, manager, is expected to occupy the new building shortly.

NEW YORK GROUP HEARS TALKS BY CAKE, BOSS AND SEARS

Approximately 250 members and guests attended the meeting of the New York Rubber Group, held at the Hotel McAlpin in New York City, on May 3. Two interesting talks were featured in the technical part of the program, one on "The Natural Rubber Situation" by Dr. W. E. Cake, assistant managing director of the Plantations Division of the U. S. Rubber Co., and the other on "The Synthetic Rubber Situation" by Dr. A. E. Boss, manager of pigment sales of the the Columbia Chemical Division of the Pittsburgh Plate Glass Corp. In an after-dinner talk, W. James Sears, director of the CPA Rubber Division, discussed "Issues Involved in the Disposal of Synthetic Rubber Plants."

During the course of the meeting, it was announced that the group has scheduled a summer outing at Blasberg's Grove in Hawthorne, N. J., on June 21. After-dinner entertainment was provided by H. Walter Grote, Director of Export of the Philblack Division of the Phillips Petroleum Co., who presented an uncanny demonstration of mind-reading. He also performed numerous sleight-of-hand tricks.

Cake on Plantation Rubber

Dr. Cake, the first speaker, described what happened to the rubber plantations in the Far East during the period prior to Japanese invasion of the Netherlands East Indies and Malaya, and during the war with Japan, and discussed the possibility of resumed production and shipments. Prior to the Japanese invasion, it became evident that neither Sumatra nor Malaya produced enough food for the resident populations, Dr. Cake stated. In order to prepare for the contingency of being blockaded and shut off from outside sources of food, both countries set up fairly heavy stocks of food reserves. In Sumatra, however, the Dutch also introduced an extensive program of foodstuff planting. As a result of this difference in procedure, the food shortage in Malaya was much more acute than in Sumatra during the war as well as during the period immediately following the cessation of hostilities. The food planting program in Sumatra, however, resulted in some loss to the area of planted rubber in that island.

Discussing the rubber lost as a result of the war, Dr. Cake said that although a complete census of rubber lost in Sumatra is not yet available, he recently received a census pertaining to 639,888 acres of plantation rubber in the East Coast district. These estates have lost a total of 89,982 acres, comprising 14 per cent of the area. Of the rubber removed, 11,115 acres consisted of young, high-yielding stock, this being about 2 per cent of the total area or approximately 12 per cent of the stands removed. On the same estates, the Japanese replanted rubber to the extent of 4,453 acres. In Malaya, from an early census immediately after the war, it was estimated that not more than 5 per cent of the estate rubber had disappeared; from a later estimate, it is now thought the total rubber lost in Malaya amounts to about 10 per cent of the plantation area before the war.

In reference to the possibilities of resumed production, Dr. Cake said that the prime factor limiting the rate of resuming production is the badly depleted labor force. Assuming the immediate availability of only 50 per cent of the normal labor force and in view of the fact that these men are in poor physical condition, he estimated that it will be impossible to secure more than about 40 per cent of the total potential production until further recruiting is done. In addition, he cited disturbances arising out of the Nationalist movement in the Netherlands Indies as another reason for holding up production by preventing the return of the estate staffs to plantations in Sumatra and Java.

Boss Discusses Synthetics

On the subject of "The Synthetic Rubber Situation" Dr. Boss asserted that during the past three years the over-all quality of GR-S, both in its ease and uniformity of processing and fabrication and in the service and efficiency of end products made from it, has shown a steady and noteworthy improvement. He stated that in a hot weather tire test on the Government Test Fleet in 1943, no group of GR-S truck tires ran more than 5,500 miles, while in a similar test in 1945 average mileages of 900-20 GR-S truck tires reached 20,000 miles, with test mileages of over 35,000 miles having been recorded in a number of instances.

After describing numerous special GR-S types that were numbered, he said that all numbered GR-S types were originally put out as X-numbers. If an experimental GR-S under an X-number runs to 100,000 pounds for three months, it is ordinarily given a GR-S number, he explained.

Outlining the functions of the Research and Development Section of the Office of Rubber Reserve, Dr. Boss explained that it is responsible for the coordination and integration of the research programs on synthetic rubber, reimbursable by Government funds. The section is organized under a manager, who is a member of the Research Management Committee, consisting of representatives of the four major companies who have been doing 75 to 80 per cent of the research and development work on GR-S.

Sears on Plant Disposal

Mr. Sears, the after-dinner speaker, started his talk by indicating why Government control of the rubber industry is necessary during the period of natural rubber shortage. Defending the necessity of certain recommendations contained in the Batt Report, Mr. Sears explained that Government control of allocation of rubber to manufacturers and of specifications of rubber products must be continued in order to keep the market stable, and that controls to assure the domestic use of synthetic rubber were necessary to serve the national security and interest.

On the disposal of synthetic rubber plants, the speaker outlined the conditions under which these plants should be sold.

The Batt Report recommended the eventual disposal of government-owned synthetic rubber plants to private interests without describing the method of disposal. Among Mr. Sears' recommendations were the following:

(1) Only qualified producers should be selected; (2) Disposal should seek to avoid future monopoly; (3) A minimum output of synthetic rubber should be guaranteed by the buyer of the plant; (4) A "recapture clause" should be included, since a company may find the plant uneconomical to operate; (5) Disposal should be consistent with Government regulations.

There will no longer be any need for Government control, he stated, if the rubber industry can develop a synthetic rubber equal to or better than natural rubber before June 30, 1948. He added, however, that today's product was not that good. Mr. Sears estimated the total amount of rubber to be consumed in this country in the next three years at 900,000 tons in 1946, 875,000 in 1947 and 800,000 in 1948.

Becomes Bancroft Subsidiary

After more than sixty years' relations between the two firms, Albert D. Smith & Co., 81 Worth St., New York 13, N. Y., sales agency for Holland cloth and other textiles to the rubber and other industries, has become a wholly-owned subsidiary division of Joseph Bancroft & Sons Co., Wilmington, Del., manufacturers of similar textile products. The new subsidiary, to be known as Albert D. Smith & Co., Inc., will maintain its offices at 81 Worth St., New York City, and will continue its own selling facilities.

To Hold Safety Congress

The 34th National Safety Congress and Exposition will be held in Chicago the week of October 7 under the auspices of the National Safety Congress. Machinery for handling room reservations through a central housing bureau is being set up and a formal announcement of hotel headquarters will be made in the near future.

Form Ross & Roberts, Inc.

Arthur M. Ross, Jr., and Alvin V. Roberts, both previously associated with the General Electric Co., have organized the firm of Ross & Roberts, Inc., at 1131 Campbell Ave., West Haven, Conn. The new concern, which is expected to start manufacturing operations in the next few months, will produce vinyl films among other products.

COLLOQUIUM ON POLYMERS INAUGURATED BY N. B. S.

Fundamental research on seemingly diverse products—rubber, textiles, paper, leather, and plastics—is being integrated through the application of the methods and techniques of the new science of high polymers. Basically, the different substances made up of large organic molecules have much in common whatever their practical form and application. The same apparatus and methods can ordinarily be used to measure the various electrical, thermal, thermodynamic, and optical properties. Likewise, many of the same procedures and the same reactions are used in the determination of the composition, molecular weight, molecular dimensions, and structure of all the large molecules.

The molecular properties of high polymers, far from being only of academic interest, are rapidly becoming of commercial importance. Various synthetic plastics and rubbers are now being bought and sold on the basis of molecular weight and related properties. Hence, it was deemed necessary for the National Bureau of Standards to acquire equipment and develop techniques for making these measurements, and to establish standards for the use of science and industry.

Part of Educational Program

In order to keep pace with developments in this new field, a Colloquium on High Polymers is being conducted as a part of the Bureau's educational program. Meetings are held one evening each week under the sponsorship of Dr. Robert Simha, a well-known authority on the subject, who has recently joined the staff of the Bureau's Organic and Fibrous Materials Division.

The speakers of the Colloquium include scientists from outside Washington who are working in academic institutions or industrial research laboratories, and also members of the staff of the Bureau, the Naval Research Laboratory, the Office of Rubber Reserve, the Milton Harris Associates, and the local universities. The topics covered have been coordinated under the following general headings: (1) Properties of solutions of high polymers; (2) Physical properties of rubber, plastics, and fibers; (3) The mechanism of formation and degradation of long chain compounds. These topics have been selected to cover fields in which the Bureau is actively engaged or is planning future work.

Out-of-town speakers at the Colloquium include some of the foremost workers in the field, and when they are in Washington arrangements are usually made for them to spend additional time in consultation on the Bureau's work in their respective fields of specialization. The expenses of these speakers are defrayed by a fee paid by the regular members of the Colloquium, and administered by the Bureau Educational Committee. Occasional visitors are welcomed to the Colloquium without charge.

Goodrich Develops "White Soot"

The development of a powdery "fumed silica" produced by subjecting ordinary silica to a complicated series of chemical reactions ending with a combustion process has been announced by the B. F. Goodrich Co., Akron, Ohio. The new form of silica, termed "white carbon black" or "white soot" by the company, is derived from ethyl silicate. The superfine, white, partly-translucent powder looks and acts entirely unlike the silica from which it is derived. According to Dr. Howard E. Fritz, vice-president in charge of research, the particles of "fumed silica" have the same size and shape as the superfine ones of carbon black and perform exactly in the same way in giving compounds added tear resistance and abrasion resistance, as well as tensile strength, without affecting the rubber's color or translucency. Commercial utilization of the new material is said to be many months away because of its present high cost in relation to carbon black. Sales will be handled by the B. F. Goodrich Chemical Co., Rose Building, Cleveland 15, Ohio.

Tire Probe Is Authorized

The Office of the Attorney General of the United States authorized a grand jury investigation of the tire industry on April 12 "to determine whether antitrust laws had been violated." The inquiry was said to have been ordered after the Department of Justice had received "a large number of complaints charging restraints on competition and discriminatory practices in the industry." It has since been learned that the investigation will be directed along lines of alleged restraints along monopoly lines and alleged price fixing by manufacturers. It will be conducted from the Southern District of New York.

DuPont's War Production Role

The full scope of the war production role played by E. I. du Pont de Nemours & Co. was recently revealed in a special report to stockholders from W. S. Carpenter, Jr., president. The report indicates that during each of the last three war years the company increased its production of chemical materials from its own plants to more than double 1939 levels, including nylon, plastics, rayon yarn, dyestuffs, and pigments. In addition, DuPont built for the government 54 plants of various sizes at 32 different locations. With regard to rubber, the report states that between December 1, 1941, and August 31, 1945, a total of 301,932,000 pounds of neoprene was produced, of which 72,687,000 pounds were made at the Deepwater, N. J., plant, and 229,245,000 pounds at Louisville, Kentucky.

Indonex Rubber Plasticizers

A line of plasticizers and extenders for natural and synthetic rubber, sold under the trade name of "Indonex," is currently being offered by the Chemical Products Department, Standard Oil Co. (Indiana), Chicago, Ill. Four grades of increasing viscosity are available, the heaviest—Indonex 639½—having the best all-round compounding properties, but the lighter grades having remarkably low volatility. Specific gravities of these materials range from .9958 to 1.021. Advantages claimed for the Indonex materials include improved dispersion of carbon blacks, smoother extruded and calendered products due to lower processing temperatures required, imparts no odor, no objectionable fumes during mixing, high loadings show no tendency to sweat out, and no tendency toward migration.

PENNSYLVANIA RUBBER CO. MANUFACTURING INFLATABLE BALLS

Inflated balls for various athletic purposes are being turned out in considerable volume these days. They are reported to give greater service and to cost less than the pre-war leather-covered ball. Pennsylvania Rubber Co., for example, is turning out basketballs, footballs, volleyballs, and other types of inflatable balls, some of which are pictured above being prepared for shipment.

REPORT OF THE BUREAU OF AGRICULTURAL AND INDUSTRIAL CHEMISTRY

Considerable work on various aspects of the rubber problem was performed in the past few years by the Bureau of Agricultural and Industrial Chemistry of the U. S. Department of Agriculture. Some of the work done during 1945 is reviewed in a report issued by Orville E. May, chief of the Bureau. Abstracts from this report pertaining to rubber follow herewith:

Cotton Tire Cords

The report for 1944 mentioned a "dual-stretch" process that had been developed for improving the quality of cotton tire cords. In this process the wetted cord was stretched under a high tension (just short of the breaking point) in hot air until dry to impart the maximum tensile strength, and then the cord was wetted and restretched at room temperature until dry under a definite lower tension that would allow the cord to regain a limited degree of its original stretchability without losing much of the extra strength imparted by the first treatment.

In the fiscal year 1945 four service tests under the supervision of the United States Army and the War Production Board were completed on tires made with cords manufactured from selected varieties of cotton. Two service tests had been carried out previously. These six tests showed beyond a doubt that cords manufactured from Wilds 13, SXP, and Stoneville 2B varieties of cotton made stronger tire carcasses than were made from the regular run of commercially produced cotton tire cord of similar construction. Truck tires containing cord manufactured from the Wilds 13 cotton gave outstanding service in comparison with similar tires containing the regularly used commercial cotton cord. Therefore, particular attention was directed toward the production of superior tire cord from the better varieties of cotton.

From the service tests made last year (1944), much additional information was gained with regard to the influence of cord diameter (gage) and construction on tire performance, and this served to guide further research on the development of improved types of cotton cord. The results of service tests on cotton cords in comparison with rayon cords were not conclusive, but it appeared, on the basis of tests made by the Government Tire Test Fleet and the results of laboratory studies on hysteresis in different parts of tire casings, that in order for cotton cord to compete with rayon cord in synthetic rubber truck tires, the cord will have to be low-gage, or the construction of the tire will have to be modified.

A method and necessary equipment were devised for testing tire cords for flexing fatigue, and the effects of variations in temperature, fiber strength, moisture content, and cord construction on flexing fatigue were determined. Apparatus was constructed for measuring the elastic properties of tire cord, which determine the extent of hysteresis and consequent heat development in the carcass, under different conditions of temperature, moisture content, and load. The results obtained with this apparatus were used to establish better criteria of the desirable properties of tire cord in terms of the functions the cord must perform in the tire.

An improved technique was devised for measuring the adhesion of tire cord to rubber. This is a modification of the commonly used "H" adhesion test, the most important change being the removal of the central cord sheath. Laboratory studies on the adhesive properties of tire cord, when vulcanized in GR-S synthetic rubber after various treatments and under different conditions, showed that the adhesion of cotton tire cord could be increased from 25 to 95 percent by treatment with certain phenolic compounds, such as resorcinol, pyrogallol, and some of their derivatives in combination with formaldehyde and rubber latex.

Work on Acrylic Rubbers

Further advances have been made at the Eastern Regional Research Laboratory in the preparation of elastomers from acrylates derived from lactic acid. The vulcanizing or curing characteristics of three types of acrylic "rubbers" (lactoprenes) have been studied extensively. The first type, consisting of polyacrylic esters, can be cured with para-quinone dioxime and red lead, benzoyl peroxide, dichloro-quinonechloroimide and litharge, or other oxidizing agents. Milling with chlorinating agents makes such material vulcanizable by sulfur and accelerators.

The second type, acrylic copolymers containing a small proportion of unsaturated compounds, can be cured with the agents just mentioned and also, without prior chlorination, by recipes containing sulfur and accelerators.

The third type, saturated copolymers of acrylic esters containing 5 to 10 percent of a reactive compound (such as chloropropyl acrylate, acrylonitrile, phenyl acrylate, or cyanoethyl acrylate), permits the widest selection of vulcanizing recipes such as used with natural or synthetic rubbers.

The recipe to be used for vulcanization should be selected on the basis of the reactivity of the copolymer. A change in recipes often produces greater differences in the rate of vulcanization and in the properties of the vulcanizates than the use of different copolymers.

The vulcanizates are resistant to oils, oxidation, sunlight and heat. They have excellent cut-growth resistance. By the proper choice of recipes, vulcanizates of outstanding resistance to heat aging or having low permanent set or a wide variation in tear strength can be prepared. These acrylic "rubbers" may also be compounded for use as latex or cement.

Through the use of different types of lactoprene and a variety of vulcanizing agents, many types of rubber-like products can be obtained. These appear to have possibilities for the manufacture of various kinds of articles for special uses.

Improved Tallow Emulsifiers

As noted in the report for 1944, the Eastern Regional Research Laboratory undertook a cooperative investigation of tallow and tallow soaps as a part of the comprehensive research program of the Rubber Reserve Company. Based upon results previously reported, mild selective hydrogenation of tallows before they are used for the preparation of soap was suggested as the best apparent remedy for the difficulties experienced with tallow soap as an emulsifying agent in the polymerization step of synthetic rubber manufacture. Selective hydrogenation was tried, in pilot plant and regular production, and found to completely eliminate the troublesome variability in tallows.

This collaborative development resulted in an increased rate of polymerization and, for the first time, a fixed production cycle, which, in turn, effected a substantial increase in production capacity of GR-S synthetic rubber plants without any increase in existing plant facilities. Furthermore, the development of a superior grade of emulsifier came at a time when the copolymer plants were changing over to continuous polymerization which requires the utmost uniformity in raw materials and reaction rates.

The spectrophotometric method of analysis, developed at the Eastern Regional Laboratory, was found by the Rubber Reserve Company to be superior to any chemical test or combination of chemical tests for detecting the presence of any residual polyunsaturated fatty acids in the hydrogenated fats and their soaps. Accordingly, this method was adopted for use throughout the industry for control purposes and for incorporation in the new specifications for purchase of the soaps.

The Rubber Reserve Company specified that all of its soap requirements for 1946 (about 130,000,000 pounds) shall be hydrogenated to a uniformly low content of polyunsaturates as shown by spectrophotometric analysis. These requirements can be met by the use of nonedible tallows and greases, edible tallows being no longer required. The research on tallow emulsifiers has not only contributed substantially to the synthetic rubber program, but it has also been instrumental in maintaining a large and important outlet for animal fats.

Road Life

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NEW POLYMERS AUTHORIZED BY OFFICE OF RUBBER RESERVE, RECONSTRUCTION FINANCE CORPORATION

Listed below are types and properties of new experimental GR-S polymers (including GR-S latices) which have been authorized by the Office of Rubber Reserve, Reconstruction Finance Corporation, since publication of those listed in our preceding issue. Procedures for the distribution and sale of these polymers will be found in our October, 1945, issue.

X-Number Designation	*Manufacturing Plant*	*Date of Authorization*	*Polymer Description*	*Special Characteristics*
X-292-GR-S	U. S. Rubber (Institute)	3/28/46	Masterbatch containing 100 parts Buca A clay and 100 parts of a GR-S type polymer made with sodium sulfide shortstopper, 40 Mooney viscosity, 1.5 pts. non-discoloring antioxidant.	Clay masterbatches are reported to have superior processing and handling characteristics. For use in stocks requiring this type of material.
X-295-GR-S	Goodyear (Torrance)	4/11/46	GR-S-38 alum coagulated.	Same purpose use as GR-S-38
X-296-GR-S	General (Baytown)	3/29/46	Masterbatch containing 50 parts EPC Black and 100 parts of a GR-S-10 type polymer, made at slightly higher temperature to normal conversion, with modifier adjusted to give Mooney viscosity of the unpigmented polymer of 44± 5.	Carbon Black masterbatches are reported to show superior processing and handling characteristics. For use in stocks requiring this type of black.
X-297-GR-S	General (Baytown)	3/29/46	Similar to X-296-GR-S varying the soap content slightly and adjusting the modifier to give a Mooney viscosity of 38± 5.	Because of the lower Mooney this polymer should show superior processing and handling characteristics over X-296.
X-298-GR-S	General (Baytown)	4/9/46	GR-S Black-I made at a slightly higher temperature with a Mooney of the unpigmented polymer adjusted to 38± 5.	This X-Number polymer should have superior processing characteristics over GR-S Black-I due to the lower Mooney.
X-299-GR-S Latex	U. S. Rubber (Naugatuck)	3/26/46	GR-S latex made with non-hydrogenated soap, carried to a slightly higher conversion, and shortstopped with hydroquinone.	Evaluation of this type of polymer indicates it to be more suitable than Type II latex for use in foam sponge.
X-302-GR-S	Goodrich (Port Neches)	4/1/46	GR-S-10 made by using slightly different rosin acid soap.	Same purpose use as GR-S-10.
X-303-GR-S Latex	U. S. Rubber (Naugatuck)	4/10/46	GR-S latex similar to X-299 latex except that the dry Mooney range is much lower, from 20-35.	Possible use in adhesives and general purpose use.
X-304-GR-S	National Synthetic (Louisville)	4/24/46	High styrene content GR-S emulsified with Daxad and rosin acid soap, carried to a high conversion, shortstopped with hydroquinone and stabilized with 1.5 parts Stalite.	To be used in tape manufacture.

Manufacture High-Alloy Rolls

High-alloy cast iron rolls, known as Nitronite "D," are being manufactured by the Mackintosh-Hemphill Co., Pittsburgh, Penna., and are expected to be of particular value in mills used by the rubber and plastics fields. An important asset of the rolls is said to be their hard, wear-resisting working faces which have a scleroscope hardness of 85 to 90, giving them a resistance to surface indentation or marking equal to that of 90 to 100 scleroscope steel. These working faces enable them to attain and retain a high polish which imparts an unmarked surface to the product. Another advantage reported for the rolls is that no axial coolant is required as they retain their shape under the conditions of heat as normally experienced in cold rolling.

Booklets on Packaging

A series of booklets on packaging were recently published by the American Management Association, 330 W. 42nd St., New York 18, N. Y. Among the subjects included in the new series are: Organizing for Package Development; Technical Advances in Packaging; Cutting Packaging Costs; Modern Package Production; Making the Most of Packaging Material.

Seeks Agency in Greece

George D. Livas, P. O. Box 186, Athens, Greece, an importing agent and representative, is interested in hearing from American manufacturers who are seeking representation in Greece. He plans to sell American products in Greece on a cash basis through letters of credit in New York.

Develop New Dispersible Soaps

A new group of water dispersible metallic soaps, known as Nopco 1097, has been developed by the National Oil Products Co., Harrison, N. J., for use in neoprene latex compounds. The new group consists of various metallic soaps such as those of zinc, aluminum, calcium, lead and magnesium, blended with an emulsifier. The resulting products are reported to be, in general, water dispersible, semi-fluid white pastes containing approximately 45 per cent solids. Ability to disperse readily in water is said to be the most outstanding property of this group of metallic soaps. The pH of a 5 per cent dispersion averages between 7.5 and 8.0. Since the emulsifier is essentially chemically inert, the dispersion is fairly stable to dilute alkalies, but not to strong acids.

LOS ANGELES HEARS TALK ON AVIATION OF FUTURE

Approximately 110 members and guests heard Harvey Stowers, assistant to the president of Aircraft Industries Association of America, Inc., talk on "The Air Age—What It Means to America and You" at a meeting of the Los Angeles Rubber Group held at the Mayfair Hotel in Los Angeles, Calif., on May 7.

In his talk, Mr. Stowers pointed out that the dire necessities of war have brought revolutionary changes in aeronautical service and in air passenger and air freight techniques, so that man has had to change his entire conception of time and space, adjusting it to transports that can span the continent in five hours and oceans in ten.

Mr. Stowers predicted that four-hour transcontinental trips will soon be a reality and that equipment now projected will make it possible to have breakfast in Los Angeles, luncheon in New York and dinner in London, and at fares comparable with rail-steamer rates. He also predicted that air fare rates already reduced to one fourth original rates, will again be quartered as soon as equipment now on aviation drawing boards is put into service.

The technical meeting, held earlier in the day, was addressed by Elbert Davis, chief chemist and technical director of the New Plastic Corp., Hollywood, Calif., who spoke on "The Chemistry and Application of Silicone Rubber and Silicone Plastics." Mr. Davis described these materials in detail, including their high temperature resistance, chemical inertness, water resistance, dielectric properties, oxidation resistance and low temperature flexibility. Elliot Royal, of H. M. Royal, Inc., presided at this session.

Another feature of the evening's program was the showing of two movies, one about the manufacture of tires and the other depicting the life of a thoroughbred horse from colthood to a day at the races.

Prizes donated by W. E. Boswell (Thiokol), W. J. Voit Rubber Corp., C. P. Hall Co. and Herman Jordan (DuPont) were won by W. L. Carver (Plastic Molded Products), John Hoerger (A. Schrader's Sons), R. Susick (Plastic Molded Products), Herman Libkind (Western Insulated Wire), E. F. Tompkins (U. S. Rubber) and Al Pickard (Braun Corp.).

General chairman of the evening was Miles Reinke and the program chairman was Curt Wolter. The June meeting of the group will be sponsored by the U. S. Rubber Co., with William Jeffers, former president of the Union Pacific Railway and the nation's first Rubber Director, as the principal speaker.

For its outstanding record in industrial safety in all its plants, Firestone has received the "Distinguished Service to Safety" award from the National Safety Council. The presentation was made recently on the "Voice of Firestone" radio program.

Tire Troubles of 1945

The number of automobile breakdowns reached record-breaking proportions during 1945, with tire trouble leading the list of motoring headaches, according to a report of the American Automobile Association. In its annual round-up of motoring woes, the A.A.A. estimated that during 1945 motorists experienced more than 36,000,000 breakdowns, compared with 30,700,000 in 1944, and 31,000,000 in the pre-war year of 1941. Tire trouble in 1945 continued unchallenged as the principal cause of breakdown, the 11,000,000 tires which went flat during the year accounting for one-third of all trouble calls.

Buffalo Group Hears Smith

Dr. W. R. Smith, chief research chemist, Godfrey L. Cabot, Inc., Boston, was the principal speaker at a joint meeting of the Buffalo Rubber Group and the Western New York Section, A.C.S., held at the University of Buffalo, in Buffalo, N. Y., on April 16. Discussing "Recent Advances in Carbon Black Technology," Dr. Smith explained some of the new manufacturing methods developed by Cabot which not only produce blacks especially adapted to synthetic rubber, but which also make possible a more efficient recovery of carbon black from sour natural gas which would otherwise be wasted. He also discussed the electron microscope and adsorption phenomena as means of determining particle size and surface area of carbon black, and explained the role these properties play in reinforcement.

DuPont Offers Technical Reports

A number of new technical bulletins have been issued in recent weeks by the Rubber Chemicals Division of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Delaware. These include: *Effects of Variations in Magnesias on Cure of Neoprene* (BL-209), *The Manufacture of Neoprene Inner Tubes* (BL-206), and *Non-Aromatic Solvents for Neoprene* (BL-207). Copies are available on request from the company.

Graphs on Market Prices

Two graphs showing the market prices of a number of chemical, rubber and related commodities, from 1910 through 1945, have been made available by the St. Joseph Lead Co., 250 Park Ave., New York 17, N. Y. Included among the commodities covered are natural rubber, synthetic rubber, gas black, lead free zinc oxide, linseed oil, titanium dioxide and red lead.

NEW HEAT AGING TEST METHOD TENTATIVELY ADOPTED BY ASTM

A new method for the Heat Aging of Vulcanized Natural or Synthetic Rubber by the Test Tube Method (D-865-46T) has been adopted as tentative by the American Society for Testing Materials. The method is based on considerable work carried out in Committee D-11, particularly Technical Committee A on Automotive Rubber.

Existing methods of aging materials at elevated temperatures in air have not been too satisfactory from the reproducibility and control standpoint. Essentially this method consists of subjecting test specimens having previously determined physical properties to controlled deteriorating influences for known periods, after which the physical properties are again measured and the changes noted. In the new method the test involves exposure of specimens to air at an elevated temperature and at atmospheric pressure.

According to the A. S. T. M., the purpose of the new test is to give an estimate of the relative resistance of vulcanized rubber to high temperature aging in a controlled and limited quantity of air. No direct correlation between the accelerated test and natural life of rubber is given or implied.

Since the rate at which deterioration proceeds during the normal life of rubber varies widely depending on conditions of exposure to heat, light and air, and on the composition and state of cure of the rubber, the new accelerated test is comparative only and must be evaluated against the performance of rubber compounds of which both the natural and accelerated aging characteristics are known.

Rhode Island Plans Outing

The regular summer outing of the Rhode Island Rubber Club will be held at the Wannamoisett Country Club, near Providence, R. I., on Friday, June 21. A golf tournament will be held in the afternoon, with dinner to be served at 7:00 P.M. H. W. Greenup, of the Tigron Latex Corp., Fall River, Mass., is secretary of the group.

Akron Group Schedules Outing

The usual summer outing of the Akron Rubber Group will be held at the Seiberling Country Club on Friday, June 21. A golf tournament will feature the outing, with prizes awarded to winners in various events. Roy M. Vance, of the General Tire & Rubber Co., Akron 9, Ohio, is secretary-treasurer of the group.

Golf Tournament for Quebec

Arrangements have been made by the Quebec Rubber & Plastics Group to hold its Second Annual Golf Tournament at the Summerlea Golf Club, Montreal, on Thursday, June 20. Further details will be announced shortly. George A. Lee, of Canadian Industries, Ltd., Montreal, is secretary-treasurer of the group.

Bennett Joins United Carbon

Myron T. Bennett, associated with the New Jersey Zinc Co. for the past 20 years, has joined the United Carbon Co., Inc., as vice-president in charge of sales. Responsible directly to Oscar Nelson, president of the company, he will make his headquarters in Charleston, West Virginia. Mr. Bennett was born on July 16, 1900, in Des Plaines, Ill., and was graduated from Knox College, Galesburg, Ill., in 1923, with a B.S. degree. Shortly after being graduated, he joined James H. Rhoades & Co., Chicago, manufacturer of sponge specialties, remaining with that company until April, 1926, when he joined the N. J. Zinc Co. as a sales representative in the Chicago area. In 1939 Mr. Bennett was transferred to the New York offices of the company as assistant manager of the Pigment Division, becoming manager of that division in October, 1942, a post he held until joining United Carbon. Mr. Bennett is a member of the A.C.S. and of Beta Theta Psi. He is married and has a daughter. Although his major hobby is work, he plays a fair game of golf.

ELA—New Lubricating Agent

A new lubricating agent for natural and synthetic rubbers has been introduced by the Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Wilmington 98, Delaware. Called ELA, it is a pale yellow liquid, whose virtue as an elastomer processing aid is said to lie in the fact that it reduces the tendency of stocks to stick to mill rolls without adversely affecting their cohesive strength. The effectiveness of the new material is believed dependent upon a chemical rather than a physical action, and thus it represents an entirely new type of rubber chemical. Tests indicate that the material is non-toxic when used under normal conditions. ELA may be added to the stock or rubber on the mill or calender roll. Amounts of 0.25 to 2% are recommended by the manufacturer.

Specific Heats of Ethylbenzene

Styrene for synthetic rubber is made from ethylbenzene and since it is to be expected that a better knowledge of the thermodynamic properties of ethylbenzene will result in a saving of critical materials, the National Bureau of Standards recently undertook an investigation along these lines. Some of the results are contained in a paper by R. B. Scott and F. G. Brickwedde in the December, 1945, issue of the *Journal of Research*, published by the Bureau. According to the paper, the specific heats of solid and of liquid ethylbenzene were measured from 15° to 300° K. The triple point was found to be —95.005°C.; the heat of fusion, 86.47 int. j g^{-1}; and the heat of vaporization, 400.15 int. j g^{-1} at 294° K. Measurements of the vapor pressure of ethylbenzene were made from 273° to 296° K.

Higgins Named Sales Consultant

W. W. "Bill" Higgins

W. W. "Bill" Higgins, who has been serving as District Manager for the United Carbon Co., Inc., since 1929, operating out of New York City, has been named general sales consultant of that company. He will be responsible to Myron T. Bennett, newly-elected vice-president in charge of sales, and will continue to make his headquarters in New York at the Empire State Building. One of the real pioneers of the carbon black industry, Mr. Higgins was born in Brooklyn in 1877. A graduate of the "School of Hard Knocks," his first business contacts were in the real estate field. He first entered the carbon black field with the Binney & Smith Co. in 1902, major purchasers being ink and paint manufacturers, with some black being sold to manufacturers of mechanical rubber goods, largely as a coloring agent. Leaving Binney & Smith in 1915, he acted as a sales agent for a few years, selling carbon black on a free lance basis, but when the Kosmos Carbon Co. was formed in Charleston, W. Va., in 1922, he joined that company. When the United Carbon Co. was organized in 1925, taking over Kosmos Carbon, Mr. Higgins returned to Binney & Smith, remaining with that company until 1929. Late in 1929, when the United Carbon Co. began to market its own carbon black, he joined that concern as district manager, a post he held until assuming his new position as general sales consultant.

Adamson Elects Officers

Adamson United Co., Akron, a subsidiary of the United Engineering & Foundry Co., has announced the election of officers for 1946. Included among those elected are the following: F. L. Dawes, president and general manager; Andrew Hale, vice-president in charge of sales and engineering; William Hagel, vice-president; George Lang, secretary and treasurer; and George Fenn, assistant secretary and treasurer.

Appointed Plant Manager

Frank H. Manchester, who has been associated with the Goodyear Tire & Rubber Co. for the past 20 years, has been appointed plant manager of the recently organized Pathfinder Chemical Corp., Niagara Falls, N. Y., Goodyear's new vinyl plastics subsidiary. A graduate of Ohio State University with a chemical engineering degree, Mr. Manchester joined the Goodyear organization in 1925. After several years in mechanical goods compounding work in the Goodyear Research Laboratories, he was transferred to Pliofilm production in 1936. Mr. Manchester is noted for his work on the adhesion of rubber to metal, and his activities with adhesives in the working of rubber with rayon cord.

New England Building Center

A permanent exhibit of building materials and equipment of special interest to home owners, builders and architects will shortly be opened under the name of "Building Center of New England" at 367 Bolyston St., Boston 16, Mass. The Center will also operate an information headquarters for such material and equipment. Its purpose is to promote building interest and give active assistance to those who plan to build, by bringing all elements of the construction industry together under one roof. The center is designed to be a useful adjunct, both to those selling building materials and equipment and also to those desiring ideas and information on how to build in the best possible manner.

Article on Rubber Situation

An excellent article on the general status of the over-all rubber industry is published in the March, 1946, issue of *Fortune* under the title of "Reversal in Rubber." The economics of the synthetic rubber industry are discussed from all angles, particularly their effect on the natural rubber industry. Recent statements on the situation by Paul Litchfield, John L. Collyer, William Batt, Sir John Hay, and others, are included, with forceful comments made in each instance. The prediction is made that "both nationally and internationally, rubber will be the creation of soldiers, administrators, and businessmen, who set themselves to influence a commodity that has many of the aspects of a public utility."

New Type of Rubber Cement

A new type of rubber cement which in color cannot be differentiated from rubber cements made with natural latex crepe rubber has been developed by the Adhesive Products Corp., 1660 Boone Ave., Bronx 60, N. Y. Known as Adco Snow White Cement, the new cement does not discolor and has many of the characteristics of natural rubber cement.

Hewitt Rubber Changes Name

Hewitt Rubber Corp., Buffalo 5, N. Y., has changed its name to Hewitt-Robins, Inc., thereby bringing in the identity of its wholly owned subsidiary, Robins Conveyors, Inc. The manufacture of foam rubber, molded rubber goods, conveyor belts, transmission belts and industrial hose in the company's Buffalo plants will continue as the Hewitt Rubber Division of the corporation. The engineering and manufacturing of conveyors and other materials handling systems at Passaic, N. J., will be known as the Robins Conveyors Division. Production operations of the two divisions are not affected by the change. Some field offices, however, are being consolidated for greater efficiency. Plans for building an addition to the Robins Conveyors plant in Passaic have also been announced.

Reprints of Papers Available

Three technical papers, prepared by members of the General Laboratories of the U. S. Rubber Co. at Passaic, N. J., which originally appeared in recent issues of *Industrial & Engineering Chemistry* have been made available by the company in booklet form. The papers are *Objective Laboratory Testing of the Processability of Elastomers,* by L. M. White, E. S. Ebers, and G. E. Shriver; *The Rugosimeter: An Instrument for Measuring Surface Roughness of Calendered Sheet Rubber,* by Melvin Mooney; and *Gel as a Definitive Property in GR-S Technology,* by L. M. White, E. S. Ebers, G. E. Shriver, and S. Breck. The booklets can be obtained by writing to the Naugatuck Chemical Division, U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

Midwest Registers Issues

Midwest Rubber Reclaiming Co., East St. Louis, Ill., has registered with the Securities and Exchange Commission 40,000 shares of $50 par value cumulative convertible preferred stock and 31,110 shares of common stock. The company proposes to offer prior subscription rights for the offering of common stock to holders of outstanding common stock of Midwest Reclaiming Company of Missouri, a predecessor corporation, at the rate of one share of the new common for each share of the old. Proceeds are to be used for expansion.

General Leases Building

General Tire & Rubber Co. has leased a factory building in Logansport, Ind., which will be operated as a branch of the company's mechanical goods division in Wabash, Ind. Howard Dodge, head of the mechanical goods division, will supervise the Logansport operation. Glass run channels in which the windows in automobiles operate will be made at Logansport. The new plant has 18,000 square feet of floor space.

Yohe Succeeds Stauffer

Dr. Robert V. Yohe

Dr. Robert V. Yohe, vice-president since January 1, 1945, of American Anode, Inc., an affiliate of the B. F. Goodrich Co., has succeeded Burton F. Stauffer, retired, as president and general manager of the company. A graduate of Drake University and the University of Minnesota, Dr. Yohe joined Goodrich in 1931 as a research chemist. Five years later he was named manager of the general chemical laboratories, and in 1939 he was appointed technical superintendent of the sundries, sponge rubber and latex products divisions. Named assistant director of the company's synthetic rubber research program in 1942, he also served as technical superintendent of the chemical division before being named manager of the company-operated synthetic rubber plant at Louisville, Ky., from which post he went to American Anode.

Produces Heated Rubber Linings

B. F. Goodrich Co., Akron, is now supplying electrically-heated rubber linings for the intake cowls of jet-propelled or jet-assisted airplanes to help keep airplane engines cool. The jet cowls, which direct the flow of air from the plane's leading edge over the starter, generator and other accessories to keep them cool, can be plugged up by an accumulation of ice. The heated rubber facings aid the cooling system by keeping ice away.

Southern Alkali Leases Plant

Southern Alkali Corp., owned jointly by the Pittsburgh Plate Glass Co. and the American Cyanamid Co., has leased a major portion of the government-owned plant at Lake Charles, La. Designed for the production of magnesium metal, the plant will be used by Southern Alkali to produce caustic soda and liquid chlorine.

Armstrong Builds Pilot Plant

A pilot plant designed primarily for development work on resilient floorings and wall coverings has been installed in the research laboratories of the Armstrong Cork Co. in Lancaster, Penna. The pilot plant is expected to yield fundamental information on the blending, mixing and forming of all types of compositions in which dry fillers and pigments are combined with plastic binders, such compositions including natural and synthetic rubber, asphalt tile and synthetic resins. In scale, the plant is about halfway between production machinery and ordinary size laboratory equipment. Equipment includes compounding facilities, several types of internal mixers, a four-roll calender of special design, and suitable inspection facilities.

Valve Helped Deceive Enemy

Much of the credit for the success of deceiving the German high command just before D-Day, by using a navy of "rubber boats" as decoys, has been given to the Schrader 2180 Dubltite Valve, manufactured by A. Schrader's Son Division of the Scovill Manufacturing Co., Inc., Brooklyn 17, N. Y. The valve was attached to "phantom ships," which were inflated and allowed to float in the waters of British ports. The cap portion of the valve had a floating check built in to prevent the escape of air in the boat or container during the pumping operation. To prevent loss when temporarily removed from the body for deflation purposes, the cap was protected by a hold-fast chain.

Abstract Supplement Available

The second and final supplement to the abstracts of vested chemical patents has been made available by the Office of the Alien Property Custodian. The supplement contains abstracts of about 800 patents and patent applications vested since publication of the first supplement in 1945. Grouped into 31 fields, the abstracts range from heavy chemicals, drugs, foods, unit processes and ceramics, to rubber, plastics, petroleum, pulp and paper. Both the first and second supplements may be purchased from the Office of Alien Property Custodian, Chicago 3, Ill., for one dollar each. The set of original abstracts, covering about 8,000 patents in the chemical field, may be obtained for $25 from that office.

Expands Cleveland Office

B. F. Goodrich Chemical Co., Cleveland, Ohio, has expanded its general office facilities with the acquisition of an additional 2,300 square feet in the Sloan Building, adjacent to the company's present headquarters in the Rose Building. The engineering department, formerly located on the third floor of the Rose Building, has been moved to the seventh floor of the same building.

PNEUMATIC CASING PRODUCTION DECREASED 2.87% IN FEBRUARY

Production of automotive pneumatic casings by American manufacturers in February amounted to 5,801,419 units, a decrease of 2.87% over the previous month, while shipments in February amounted to 5,468,238 units, a decrease of 1.2%, according to the latest statistical report of the Rubber Manufacturers Association.

Passenger casing production totaled 4,585,398 units in February, a decrease of 2.5%, while production of truck and bus casings totaled 1,216,021 units, a decrease of 4.1% of approximately the January level. Output of passenger, truck and bus tubes amounted to 4,874,026 units, an increase of 5.1% over the 4,639,762 units produced in January.

While production of automotive casings was down in all classes, the R. M. A. attributed the decline to a shorter working month, since the average daily production actually showed an increase. Unofficial estimates on weekly production indicated that the rate of output climbed in April. The report noted, however, that tire manufacturers are still faced with shortages of materials, chiefly in textiles, which might seriously impede production in the later months of the second quarter and jeopardize the industry's otherwise good possibilities of achieving its goal of 66,000,000 passenger car tires in 1946.

In line with decreased production, February shipments of passenger casings were 4,333,258 units, down 1.1% as compared to January, and shipments of truck and bus casings were 1,134,980 units, down 1.8%. Tube shipments—4,386,220—increased 2.3% over the 4,286,947 units shipped the previous month.

Shipments for export of all types of casings, with the majority in truck and bus sizes, amounted to 92,746 units in February and represented a little more than 1½% of total shipments. For the first two months export shipments amounted to 184,018 casings compared with 52,214 casings in the same period of 1945.

Manufacturers' inventories at the end of February were ahead of January in all categories: 2,495,805 passenger casings, up .59%; 990,944 truck and bus casings, up 3.8%; and 4,417,884 tubes, up 7.2%.

The report covered only automotive pneumatic casings and tubes. It did not include any statistics on solid tires, or on pneumatic tires for motorcycles, bicycles or aviation, agricultural and industrial equipment.

Colledge Opens Detroit Office

E. W. Colledge, General Sales Agent, Inc., Jacksonville, Fla., has announced the opening of a branch office located at 1032 Lafayette Bldg., Detroit 26, Mich. J. B. de Bauernfeind, recently discharged from the Navy as a lieutenant, has been appointed manager of the new office.

One way to enjoy a meetng of the Rubber Division, A.C.S., is depicted above. The photograph shows, left to right, Arthur Nellen (Lee Rubber) E. B. Curtis (Vanderbilt), and Jean Nesbit (U. S. Rubber Reclaiming) on the boardwalk at Atlantic City during the recent meeting of the Division. (Photograph by T. T. MacConnell.)

Dow Corning Develops Antifoam

DC Antifoam A, a new silicone compound, has been developed by the Dow Corning Corp., Midland, Mich., for use against foam in aqueous solutions and emulsions. This new antifoam agent is a viscous compound which is translucent, colorless and tasteless. It is chemically inert, nonvolatile, and has a slight but not unpleasant odor. It is insoluble in water or alcohol and can be dispersed in such solvents as benzene, carbon, tetrachloride, and toluene. According to tests performed by the company during the vacuum distillation of various rubber latices, it was shown that foaming was effectively inhibited by five parts of DC Antifoam A per 1,000. Foaming during steam distillation of emulsions of butadiene-styrene copolymers was killed by a combination of one part of DC Antifoam A and twelve parts of oleic acid in a concentration of 80 parts per million. The company states, however, that the effectiveness of the antifoam agent is still unpredictable in different latices.

Miller Products Expands

Miller Products Co., Inc., distributor of industrial rubber products, located at 29 Warren St., New York 7, N. Y., has increased its office space and has added to its purchasing and sales personnel. The company already represents several leading rubber manufacturers in the New York area, but is interested in hearing from some smaller or medium sized specialized producers of rubber goods who wish similar representation. B. S. Miller is president of the company.

PROGRAM IS COMPLETED FOR GIBSON ISLAND CONFERENCES

Special research conferences on chemistry and its allied fields will again be held at Gibson Island this year under the auspices of the American Association for the Advancement of Science. Conferences for the summer of 1946—the ninth to be held—are scheduled for the weeks of June 17 through August 23.

A series of conferences on "Organic High Polymers" will be a feature of the 1946 schedule, including six papers and a Symposium on "The Present Status of Molecular Weight Methods." Titles of the six papers and their authors follow: *Copolymerization,* F. R. Mayo; *Rate of the Steps in Vinyl Production,* P. D. Bartlett; *Branching and Gelation in Polymers,* W. H. Stockmayer; *Structure of Synthetic Rubber,* W. O. Baker; *Some Observations on the Functions of Emulsifiers, Promoters, and Modifiers in Emulsion Polymerization Reactions,* W. B. Raynolds; *Physical Properties in Relation to Structure of Vulcanized Rubber,* P. J. Flory.

The Symposium on "The Present Status of Molecular Weight Methods" will include six speakers on a like number of subjects. These will be: *Osmotic Pressure,* F. T. Wall; *Light Scattering,* P. M. Doty; *Ultracentrifuge,* J. B. Nichols; *Viscosity,* R. H. Ewart; *Effect of Association in Solution on Molecular Weight Results,* H. M. Spurlin; *Some Limitations of Present Methods of Molecular Weight Determination.* A speaker for the latter subject will be announced later.

The sessions on "Organic High Polymers" will be held from July 1 to 5. Other sessions to be held during the conference will cover petroleum chemistry, catalysts, textiles, corrosion, medicinal chemistry, vitamins, food and nutrition, cancer, and instrumentation. All requests for attendance, or for any additional information, should be addressed to Sumner B. Twiss, Chemistry Department, Wayne University, Detroit 1, Mich.

Martin Aids Plastics Research

Glenn L. Martin Co., Baltimore, Md., has granted $50,000 to the Case School of Applied Science, Cleveland, Ohio, to carry on fundamental research work in chemistry. The school has revealed that the gift from the aircraft manufacturing firm would be used over a two-year period for basic experiments in the field of high polymers, including synthetic rubber, plastics and plasticizers.

Flintkote Plans New Laboratory

As part of an accelerated program of product research and development, the Flintkote Co., Inc., New York 20, N. Y., will build a new research laboratory at Morristown, N. J., at an approximate cost of $1,000,000 for plant and equipment. The laboratory will be Y-shaped and completely air conditioned, with a three-story tower section and two wings.

NAMES IN THE NEWS

R. T. Brown, who served as manager of military products engineering for the Goodyear Tire & Rubber Co. from 1940 through September, 1945, and is currently administrator of the company's technical operations, has received two War Department citations in "appreciation for patriotic service in position of trust and responsibility."

Edward J. Kleinfeld, production manager for the Chardon Rubber Co., Chardon, Ohio, for the past eight years, has left the company to enter the retail field.

F. R. Shaw, who has been associated with the Goodyear Tire & Rubber Co. for 27 years, most recently as superintendent of the smokeless loading division of the company-operated bag-loading plant at Charlestown, Ind., has been appointed plant manager of the company's new mechanical goods manufacturing plant at Lincoln, Neb.

Paul A. Frank, president of the National Rubber Machinery Co., Akron, has been elected a director of the Cooper-Bessemer Co., Mt. Vernon, Ohio.

Frederick E. Clark, until recently associated with the Bureau of Agricultural Industrial Chemistry of the United States Department of Agriculture at Salinas, Calif., has joined the technical staff of Battelle Memorial Institute, Columbus, Ohio, where he will be engaged in research in organic chemistry.

Oliver G. Vinnedge, associated with the Dryden Rubber Co., Chicago, Ill., since 1924, most recently as vice-president in charge of sales, has been elected vice-president and general manager of the company, while John Groot, associated with the company since 1921, has been appointed purchasing agent.

Dr. Jan Teppema, connected with the B. B. Chemical Co., Cambridge, Mass., since 1943 as chief chemist, and previously with the Goodyear Tire & Rubber Co., Akron, has joined the International Plastic Corp., Morristown, N. J., as Director of Laboratory Operations.

W. F. Billingsley, who worked on special tire development problems for the B. F. Goodrich Co. during the war, and previously served as manager of tire testing for the company from 1933 to 1941, has been named manager of tire construction for the company.

Charles R. Ince has been appointed manager of metal sales of the St. Joseph Lead Co., New York City, while Malcolm Bonynge, recently discharged from the Navy, and Dwight Marshall have been appointed assistant managers.

D. D. Le Fevre, who has been associated with the Cotan Corp., Newark 5, N. J., for nine years as sales manager, has been named a vice-president of the company.

Daniel B. Doherty, recently released from special duty with the Navy where he did development and research work on protective coatings and corrosion resistance at the torpedo station at Newport, R. I., for over four years, has rejoined Godfrey L. Cabot, Inc., Boston 10, Mass., as a member of the technical sales staff.

William A. Gordon, who has been associated with the Farrel-Birmingham Co., Inc., Ansonia, Conn., for 40 years, has retired from his position as product manager of the company's Plastic Extruder Sales Division.

Howard R. Gaetz, who has been associated with the U. S. Rubber Co. since 1942, serving as production superintendent of the company-operated ordnance works at Williamsport, Penna., and Kankakee, Ill., and the synthetic rubber plants at Institute, W. Va., and Naugatuck, Conn., has been appointed plant superintendent of the company's synthetic rubber plant at Naugatuck, Conn.

Dr. H. Douglas Tate and Dr. Travis W. Brasfield, entomologist and plant pathologist-mycologist, respectively, have joined the staff of the agricultural experiment station of the U. S. Rubber Co. at Bethany, Conn.

Ralph Woodbury, who retired from the Hood Rubber Co., Watertown, Mass., on March 29, was given a testimonial dinner at the Copley Plaza Hotel in Boston, Mass., on March 25 by suppliers of the industry.

N. B. Nichols, who has been associated with the Radiation Laboratory, Cambridge, Mass., a subsidiary of the Massachusetts Institute of Technology, for the past four years, has been appointed director of the research division of the Taylor Instrument Companies, Rochester 1, N. Y.

Harold M. Parsekian, formerly of Binney & Smith Co., has been appointed director of sales and technical service for the Plastics and Chemicals Division of the Glenn L. Martin Co., Baltimore, Md.

J. Kenneth Craver, a member of the research staff of the Monsanto Chemical Co., St. Louis 4, Mo., has been appointed co-ordinator of plasticizers and resins for the company's Organic Chemicals Division.

Harry T. Fogg, associated with the Alfred Hale Rubber Co., North Quincy 71, Mass., since 1941, has been appointed sales manager of the company.

J. F. McWhorter and Marvin Achterhof, research engineer and chief chemist, respectively, of the Ohio Rubber Co., Willoughby, Ohio, both have received a Certificate for Exceptional Service to Naval Ordnance Development for their "outstanding performance in connection with the research and development of the formulation of specifications, methods of testing, and definitions of terms pertaining to rubber, rubber-like materials and products therefrom."

R. E. Elliott, associated with the Ideal Roller & Manufacturing Co., Chicago, for the past ten years in development work, is now associated with the Chemical Products Department of the Standard Oil Co. (Indiana), Chicago, where he will specialize in the sale of rubber compounding materials.

R. J. Noble, noted latex authority, who recently retired from the Chemical Warfare Service of the Army with the rank of Colonel, has been serving with the Heveatex Corporation, Melrose, Mass., as general manager since the first of the year.

L. B. Gordon, who has been associated with the rubber industry for more than 20 years as an electrical and mechanical engineer, has been appointed Director of Engineering of the Dayton Rubber Manufacturing Co., Dayton, Ohio.

Dr. D. P. Morgan, until recently director of the Chemicals Bureau of the War Production Board, has joined W. R. Grace & Co., importers, New York City, as head of chemical market research and development.

Harry E. Smith, vice-president of the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J., has been placed in charge of the corporation's rubber product sales and marketing.

J. S. Wainwright, associated with the Mansfield Tire & Rubber Co., Mansfield, Ohio, as general sales manager for 25 years, has been promoted to vice-president in charge of sales.

R. A. Favenza, who represented the Rubber Development Corp. in Colombia and Ecuador during the war period, has rejoined the Charles T. Wilson Co., Inc., New York 5, N. Y., as sales representative in Latin America.

James S. Barrie, who has been manager of footwear commercial activities and distribution for the Hood Rubber Co., Watertown, Mass., a division of the B. F. Goodrich Co., since 1939, has been named vice-president in charge of distribution.

Cabot Promotes Simonds

Donald Simonds

Donald Simonds, recently discharged from the Navy and previously assistant manager of the Special Products Division of Godfrey L. Cabot, Inc., Boston, Mass., has been appointed assistant general sales manager of the Cabot organization. A graduate of Tufts College, Mr. Simonds came to Cabot after serving as research assistant on chemical problems at Harvard University. Most of his work for the company has been in technical sales and service with special attention to the problems of the rubber industry.

Develops Pliolite S-5

A new synthetic copolymer resin which is said to be capable of conserving natural oils and resins for indoor paints, has been developed by the Goodyear Tire & Rubber Co., Akron. Known as Pliolite S-5, the new resin is described as an improvement over Goodyear's prewar Pliolite, a natural rubber product which served as a vehicle for paints. Pliolite S-5 differs from the original Pliolite in that it is not soluble in the 100 per cent aliphatic hydrocarbon thinners but is soluble in aromatic hydrocarbon thinners and mixtures of aliphatic and aromatic thinners. The new resin is reported to offer exceptional advantages in acid and alkali-resistant coatings, concrete flo enamels and architectural finishes of all sorts.

Krosen Heads Johnson Rubber

Richard Krosen, president of the Cleveland Sports Goods Co., has been elected president of the Johnson Rubber Co., Middlefield, Ohio. Other officers elected by the company include: Richard W. Caslow, vice-president; Clarence Swallow, treasurer; Hugh G. Johnson, secretary and assistant treasurer; and William S. Miller, assistant secretary. Directors, in addition to the foregoing officers, include James Laughlin and Lugh M. Johnson.

Introduces Seminex Black

The availability of "Seminex," a new semi-reinforcing furnace carbon black, has been announced by the Carbon Black Division of the Jefferson Lake Sulphur Co., Inc., Houston, Texas. The new black, said to have been thoroughly tested by a number of rubber laboratories and to be found to be a high quality semi-reinforcing furnace black, is being produced at the company's plant in Clemens, Brazoria County, Texas. According to the manufacturer, Seminex has been found to have certain properties in GR-S compounds not commonly associated with the SRF class of blacks, including low hardness, high elongation, and a remarkably low heat build-up. It is marketed as a dustless pelletized product, in multi-wall paper bags containing 25 or 50 pounds. The average particle diameter ranges from 60 to 70 milli-microns, as revealed by the electron microscope. A technical report on Seminex has been prepared and is available on request from the company.

More Names in the News

R. W. SMITH, associated with the B. F. Goodrich Co. since 1940, has been named manager of the company's rubber track development, while W. F. PERKINS, who has been with the company since 1928, has been appointed manager of the tire development laboratories.

L. D. CARVER, associated with the Central Engineering Division of the General Cable Corp., New York 17, N. Y., for the past few months, has been transferred to the company's plant at St. Louis 15, Mo.

ARTHUR W. CARPENTER, manager of testing laboratories, B. F. Goodrich Co., Akron, has been nominated for president of the American Society for Testing Materials. He is currently chairman of Committee D-11 on Rubber Products.

R. J. THOMAS, vice-president and treasurer of the Seiberling Rubber Co., Barberton, Ohio, has been elected a director of the company, succeeding A. M. VAUGHAN, who resigned recently due to ill health.

FRANK H. SMART, formerly of the Plastics Division of E. I. du Pont de Nemours & Co., Inc., has joined the sales staff of Whittaker, Clark & Daniels, Inc., New York.

H. D. WEXELBERG, formerly associated with Van Cleef Bros., Chicago, Ill., has been named sales manager of the Gross Manufacturing Co., San Gabriel, Calif.

FRED L. WEST, formerly affiliated with the U. S. Rubber Co., has joined the development division of the Sun Chemical & Color Co., New York City, as a research chemist.

Brewer Heads Master Tire

W. B. Brewer

W. B. Brewer, executive vice-president of the Master Tire & Rubber Co., Findlay, Ohio, since 1944, has been elected president of the company. Officers re-elected by the company include: C. P. Weaver, vice-president in charge of sales; M. S. Fetter, treasurer; and C. E. Hart, secretary. John F. Schaefer, president of the company for the past eight years, has been elected chairman of the board.

Plan More Passenger Tires

Plans are being made by the Goodyear Tire & Rubber Co. to start passenger tire production in the government-built plant which the company acquired recently in Topeka, Kan. Production of passenger tires will be in addition to the truck and farm tractor tires which are now being turned out by Goodyear at the plant. Molds and other equipment have been ordered, and production of passenger tires is expected to start at the plant this summer.

Dodge Heads New Department

Howard Dodge, general manager of the Wabash, Indiana, mechanical goods factory of the General Tire & Rubber Co., since 1936, has been appointed head of the company's new mechanical and industrial products department. With headquarters at Akron, Mr. Dodge will will direct the activities of the mechanical goods division at Wabash, Ind., and the general metal products division at Cuyahoga Falls, Ohio.

Buys Factory Site in Utah

Thermoid Co., Trenton 6, N. J., which recently sold its Los Angeles plant, as reported elsewhere in this issue, has purchased a 27-acre factory site in Utah as a major production center of automotive friction materials and industrial rubber products.

FINANCIAL NEWS

GENERAL CABLE STOCKHOLDERS TO VOTE ON RECAPITALIZATION

Directors of General Cable Corp. have submitted a plan of recapitalization for approval of the stockholders at a special meeting on June 10. If approved, the proposal would give present holders of the 7 per cent cumulative preferred one share of a new 4 per cent $100 par value cumulative first preferred, one share of a new 4 per cent $50 par value cumulative convertible second preferred, and $12.50 in cash for each share presently held. This would be the equivalent, in par value and cash, of present par value, plus dividend arrears, and the redemption premium.

Present Class A stock, with dividend arrears of $4, would be exchanged for common stock on a basis of four common for each Class A share. The proposed capital structure of the company would therefore consist of 150,000 shares of first preferred of $100 par value, 75,000 shares of second preferred of $50 par value and 1,898,614 shares of common. There are presently 671,858 shares of common outstanding.

Under the plan, dividend requirements of the new preferred would aggregate $900,000 annually, compared with $1,050,000 presently incurred on the preferred, and prospects of early dividends on the common stock are expected to improve if the plan is consummated.

Approval of two-thirds of each class of stock outstanding is required for adoption of the proposal. It is contemplated that present preferred shares not exchanged under the plan will be called on August 1 at $110 per share and accrued dividends to that date of $52.50, with a group headed by Blyth & Co. underwriting the exchange offer.

Debentures of $40,000,000

A new issue of $40,000,000 of 2-⅝ per cent debentures has been offered to the public by the U. S. Rubber Co. The debentures, due May 1, 1976, are priced at 100½ per cent and accrued interest from May 1. Representing the first public financing for expansion, improvement and rehabilitation purposes by one of the "Big Four" of the rubber industry in the postwar era, this offering constitutes entirely new-money borrowing by the company. The debentures will have the benefit of a sinking fund of $2,000,000 a year, to begin May 1, 1957, which will retire the entire issue by maturity.

Thiokol Corporation

For 1945: Net loss of $13,872, which compares with a net income of $11,996 for the previous year. Gross sales amounted to $1,397,793, as compared to $1,247,369 in 1944.

New Jersey Zinc Company

For 1945: Net earnings of $5,161,243, which is equal to $2.63 a share, and which compares with $5,283,423, or $2.70 a share, for the previous year. Final Quarter: Net earnings of $1,403,029, or 71c a share, against $1,285,759, or 66c a share, for the final quarter of 1944.

Norwalk Tire & Rubber Co.

Six Months Ended March 31: Net profit of $220,196, which is equal to $1.01 a common share, as compared with $116,987, or 50c a share, for the similar period of the previous fiscal year. Net sales amount to $5,160,514 and compare with $4,399,269 for the same period for the previous fiscal year.

Brown Rubber Company

For 1945: Net income of $196,886, which is equal to 78c each on 251,100 common shares, as compared with $149,217, or 70c each on 211,000 shares, for the previous year. Total current assets at the end of the year amounted to $594,966, as compared with total current liabilities of $200,622.

General Cable Corporation

First Quarter: Net loss of $2,231,404, which compares with a net income of $675,415 for the same period in 1945. The amount of income which may accrue under the "carry-back" provision is dependent upon results for the full calendar year and cannot be predicted at this time.

Belden Manufacturing Co.

First Quarter: Net income of $122,566, which is equal to 46c each on 265,300 common shares, as compared with $118,373, or 49c each on 241,547 shares, for the same period in 1945.

Hewitt Rubber Corporation

For 1945: Net income of $641,020, which is equal to $2.30 each on 278,714 capital shares, and which compares with $519,985, or $3.09 each on 168,188 shares, for the previous year.

I. B. Kleinert Rubber Co.

For 1945: Net income of $236,848, which is equal to $1.46 a common share, as compared with $276,462, or $1.70 a share, for the previous year.

Anaconda Wire & Cable Co.

For 1945: Net profit of $646,324, which is equal to $1.53 a share, and which compares with $1,225,282, or $2.90 a share, for the previous year.

Norwalk Offers Debentures

Norwalk Tire & Rubber Co., Norwalk, Conn., has placed on the market $689,500 of 4 per cent convertible twelve-year debentures. The offering represents the unsubscribed part of a new issue of $1,444,500 of debentures first offered to holders of common stock. The debentures are convertible into common stock at the rate of five shares for each $100 of debentures until April 15, 1951, and thereafter at the rate of 4½ shares of common stock for each $100 of debentures. Proceeds will be used to buy and finish buildings now owned by the Reconstruction Finance Corp. and to pay off debt incurred in redeeming 7 per cent cumulative preferred stock.

General Plans New Stock

A meeting of the stockholders of the General Tire & Rubber Co. will be held on May 29 to authorize 30,000 shares of new preferred stock. A registration statement covering the sale of 25,000 of these shares and 25,000 shares of old preferred stock is being filed with the Securities and Exchange Commission. Proceeds of the issue, expected to net $5,000,000, will be used for the retirement of bank indebtedness.

Dewey & Almy Chemical Co.

Year ended December 31: Consolidated net profit, before war-end adjustments, is $600,138, which is equal to $1.69 a share of common stock, and which compares with $580,807, or $1.89 a common share, in 1944. Sales of $11,032,540 reached a new high record and increased 12 per cent over the year before.

Thermoid Company

For 1945: Net income of $475,194, which is equal to 63c a common share, and which compares with $754,565, or $1.11 a share, for the previous year.

O'Sullivan Rubber Corp.

For 1945: Net income of $328,326 on gross sales of $6,937,993, which compares with a 1944 net income of $162,721 on gross sales of $7,264,042.

Dryden Rubber Company

For 1945: Net income of $311,120, which is equal to $1.24 a share, and which compares with $306,632, or $1.23 a share, for the previous year.

Enters Plumbing Fixtures Field

General Tire & Rubber Co. has announced its entry into a new field, the manufacture of plumbing fixtures. It has been revealed that the Pasadena, Calif., plant of the company, using newly developed methods of metal working, is already in large-scale production of the fixtures and sales are expected to total $6,000,000 this year.

TRUCK TIRE OF THE FUTURE TO HAVE "DUAL PERSONALITY"

The truck tire of the future, born of war-time experience of tire manufacturers, will be a tire with a "dual personality", according to William O'Neil, president of the General Tire & Rubber Co., Akron, Ohio. Explaining the statement, the General Tire executive stated that before the war a truck tire usually was discarded when the tread wore out. There was some recapping, but the vast majority of truck operators used their tires until the tread was gone and then replaced them.

"The tire of the future will be a double tire", he said. "One part will be the carcass; the other the tread. Today we are building a carcass as an investment for the truck owner. It will take two or three or even more treads before it must be thrown away. The other part will be the operating part, or the tread.

"Ninety per cent of the people of America do not throw their shoes away when the soles wear out. They have the shoes resoled at least once and in many cases several times. It will be the same with the tires of the future.

"The war made it necessary for us to hoard our rubber supply. We learned that recapping was essential, if our stockpile of natural rubber was to last until our synthetic supply was available. Instead of discarding the tire carcass when the tread was gone, fleet operators learned that new treads would add thousands of miles to the carcass.

"Improved carcasses, then, was the problem facing us. Our scientists went to work. The carcasses we are making today—a mixture of natural rubber and synthetic—are superior to any ever made before the war. They are capable of outwearing several treads. The carcass of the future will be even stronger.

"The carcass of tomorrow will be an investment rather than a one-time item. It will produce dividends in the form of greater truck tire mileage. We will always use some synthetic rubber in truck tires. We need it badly in tire treads. Without it we can never attain the same wearing qualities we had in prewar tread. The improvement we now have is due to the improvements in carcass rather than the improvement in tread.

"As more real rubber becomes available we will increase the percentage we use in truck tires. In the present tires, we use 30 per cent real rubber, all of it in the carcass. In the next few months we hope to be able to step up real rubber content in the carcass to 40 per cent, thus making it even better than the superior carcass we have today. The other 25 per cent will be used in the tread, to give additional qualities to that part of the dual personality tire.

"It is almost impossible to get the best tread with synthetics. One of the reasons is that compounding is difficult. Compounding is the addition of chemicals to rubber to give various essential qualities of wear and safety. With a small percentage of rubber this compounding is possible.

"These comments all refer to the tire now being built by the rubber industry. As more materials are available, the premium tire will return to the market. It is the policy of our company not to make these tires until we can be sure that every necessary material be available in quantity, so that truck tire operators can be assured of the same performances, the same extra value that they received in the premium tires of the prewar period. It is likely to be several months before this is possible."

NEWLY ELECTED OFFICERS OF CANADIAN RUBBER DIVISION

N. S. Grace G. R. Smye H. G. Deline

Officers of the newly formed Division of Rubber Chemistry, latest adjunct to the recently organized Chemical Institute of Canada, are, as previously reported, Dr. N. S. Grace, chairman; G. R. Smye, vice-chairman, and H. G. Deline, secretary-treasurer. Brief biographies of the three new officers follow:

Dr. Grace received his B.S. and M.S. degrees from the University of Saskatchewan in 1927 and 1929, respectively. After acquiring his Ph.D. in London, England, in 1931, he joined the research staff on atomic problems at the University of California (Berkeley), where he stayed until 1933. From 1933 to 1935 he continued his atomic research at the University of Toronto, Toronto, Canada. He worked as a research chemist of the Gutta Percha & Rubber, Ltd., Toronto, from 1935 to 1937, and the National Research Council, Ottawa, from 1937 to 1939. He assumed his present duties as chief chemist and technical superintendent of the Dunlop Tire & Rubber Goods Co., Ltd., in 1939. Dr. Grace has served as chairman of the Ontario Rubber Group and the Toronto Section of the Canadian Institute of Chemistry, which has since been merged into the Chemical Institute of Canada. He is now chairman of the Program Committee of the Toronto Quality Control Society, and a member of the Rubber Division, A. C. S., the American Society of Testing Materials, and the S.C.I.

Mr. Smye graduated from the University of Toronto as an honor student in chemical engineering in 1923 and joined the Kitchener Tire Plant of the Dominion Rubber Co. as an analytical chemist. In 1927 he became associated with the Firestone Tire & Rubber Co. of Canada and was elevated to his present position as chief chemist two years later. He is a Mason and a member of the Rubber Division, A. C. S., and the Ontario Professional Engineers. A charter member of the Hamilton Chemical Association and the Ontario Rubber Section, he has served as president of both organizations.

Mr. Deline received his B.A. degree from Queens University, Kingston, Canada, in 1931, and his B.S. degree in chemical engineering from the same institution one year later. He joined the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Canada, in 1933 as laboratory chemist, working on process control problems in elastic thread, golf ball and mill room, and was put in charge of the laboratory in 1945. He has served as secretary-treasurer and chairman of the Ontario Rubber Section. During his term as chairman, the Section became affiliated with the Chemical Institute of Canada.

Glyco Opens New Offices

Glyco Products Co., Inc., has announced the opening of its new Chicago, Ill., offices at 30 N. Dearborn St. These offices are under the personal supervision of Dr. George H. Goodyear, who has been closely associated with the technical sales development of the company's products for many years. Assisting Dr. Goodyear in the technical sales of Glyco products in the Chicago industrial area are Paul Sanderson, formerly a technical staff member of the Mine Safety Appliance Co., Pittsburgh, Pa., and David J. Dean, formerly associated with the Pittsburgh Plate Glass Co.

NEWS IN BRIEF

The Faxfilm Company has been organized at 1220 West 6th St., Cleveland, Ohio, to handle the manufacture and sale of Faxfilm, the new method of surface examination used to determine surface characteristics of virtually all types of materials. Faxfilm was originally developed by Rex D. McDill, who will act in an advisory capacity.

Goodyear recently completed its 375,000,000 pneumatic tire. The tire, a 6.00-16 four-ply passenger car casing, was built at the company's plant in Akron.

Bigelow-Gibson, Inc., Toledo, Ohio, has been named distributor for Hewitt Rubber. The distributorship will cover parts of Ohio, Indiana and Michigan.

Oxygen tents of transparent Vinylite film and Vinylite plastic rigid sheet which will not crack or develop pinholes are being made by Plymouth Rubber.

Safety red, warning a worker when his hands are dangerously near moving machinery, is a feature of the new Stanzoil neoprene-coated canvas glove, designed and made for industrial use by the Pioneer Rubber Co., Willard, Ohio.

Shinguards for mine shuttle car tires which take a heavy beating far underground have been developed by Goodyear. Circular protectors of 3/8-inch steel, these tire shields may be applied easily to protect the sidewall area. No change in tire pressure is required and the shields are designed for Goodyear L-type rims.

The New York Regional Office of the Bureau of Foreign and Domestic Commerce is now located at 61 Broadway, New York 4, N. Y. The telephone number is WHitehall 3-4848.

A new catalog describing and illustrating the range of M.S.A. safety equipment for industrial applications, including many new products, has been published by the Mine Safety Appliance Co., Pittsburgh, Penna.

"Plastiglaze," a new type synthetic resin, which will make a cheap plaster cast as strong and durable as an expensive plastic molding, has been developed by Duorite Plastic Industries, Culver City, Calif. It is an air-setting material produced by combining thermoplastic and thermosetting resins in one of several solvents. Normally transparent, it can be colored with numerous common pigments.

Production of MIBK, a methyl isobutyl ketone and a desirable solvent for cellulose esters and vinyl resins, has been announced by the Shell Chemical Co., San Francisco, Calif. Features of MIBK are high boiling point, no hydrolitic reaction and good stability during storage.

Fremont Rubber Co., Fremont, Ohio, is building a $30,000 addition to its plant that may be used for the manufacture of plastic products.

Lumirol Co., 153 E. 26th St., New York 10, N. Y., has started fabricating typewriter platens and feed rollers from clear Lucite. Not only are the plastic platens good for the life of the machine, but acids, humidity and other conditions that attack ordinary rollers do not affect the plastic rollers.

A folder, "Hastelloy Facing for Corrosion Resistance," describing a new process used to protect chemical plant and oil-refinery equipment from corrosion, has been made available by Haynes Stellite Co., Kokomo, Ind.

H. O. Canfield Co., Bridgeport, Conn., has established a new Design Engineering Service to assist the automotive, aviation, electrical, and general industrial fields.

Large-scale production of Lustron, the polystyrene molding compound, has been started by the Plastics Division of Monsanto Chemical.

A new type of laminating plastic known as the C-5 Resins has been made available by Bakelite Corp. For practical purposes C-5 Resins are obtainable in all colors and provide hard, continuous films. They are reported highly versatile in that wide latitude of molding temperatures and pressures is practical.

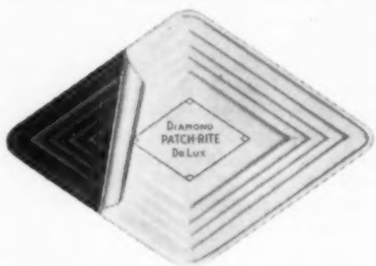
Pliofilm, according to Goodyear, can now be used as a wrapping for oranges, grapefruit and bacon.

The introduction of a complete new line of streamlined gauges has been announced by the U. S. Gauge Division of American Machine and Metals, Inc., New York City. The streamlines of the neutral gray are enhanced by a striking ivory-toned dial with contrasting red and black gradations.

Hewitt Rubber has appointed La-France Industries, Philadelphia, Penna., as sales agent for Restfoam to furniture manufacturers.

New Diamond Tire Patch

The new Diamond Patch-Rite Deluxe tire patch, manufactured by the Buxbaum Co., of Canton, Ohio, is said to reduce considerably the bumping caused by ordinary tire casing patches. The new



patch is designed in a modified cone shape, increasing in thickness from the edges toward the center with the resulting center point absorbing the road impact first. It is made to fit all injuries and can be vulcanized for a permanent repair or used as a cold patch. Both regular and sidewall sizes are available.

U. S. Rubber has launched a broad program designed to bring the products of its laboratories and factories within reach of the farmer and to help him achieve greater production in the field. To acquaint company personnel with the aims and scope of this program, a farm survey exhibit was recently held in New York City at which products ranging from rubber jar rings to huge tractor tires, and including chemicals for crop control and several non-rubber items, were shown.

The Encyclopedia of Business Information Sources, a new publication which contains over one hundred pages of government information and lists all leading trade associations, trade publications, business directories and handbooks in their proper classification, has been published by the National Research Bureau, Inc., 415 No. Dearborn St., Chicago, Ill.

A bassinet mattress, made of shredded foam rubber and covered with ACA ticking or white rubberized double-coated fabric, has been introduced by the National Allergic Sales Co., 47 W. 63rd St., New York 23, N. Y.

A silver plaque of the Great Seal of the State of Missouri was presented recently to the battleship, named for that state, by Governor P. M. Donnelly on behalf of the mine, mill and smelter workers of the St. Joseph Lead Co. The presentation ceremonies took place at Flat River, Mo.

How small businesses may obtain credit and capital for sound business ventures is explained in a bulletin on "Credit Sources for Small Business" issued recently by the U. S. Department of Commerce.

Darex Copolymers in Production

The Organic Chemicals Division of Dewey & Almy Chemical Co., Cambridge, Mass., has announced that full scale production of the first of the series of Darex copolymers has now been attained. Facilities available at Cambridge are producing Darex Copolymers 2 and 3, while equipment for the manufacture of synthetic rubber and resins is being installed at a plant in Acton, Mass. The Darex copolymers, made by copolymerizing butadiene and styrene to give a material similar to GR-S but with a high styrene content, are compatible with natural rubber, GR-S, butadiene-acrylonitrile rubbers, Butyl and neoprene, as well as with various types of plastics. The No. 2 and 3 types are specifically recommended by the manufacturer for blending with GR-S to make firm, light-colored cured stocks, with low filler content and low sulfur, which have the properties of high hardness, good abrasion, good flex-cracking resistance, and improved processing.

American Tire Exports Revealed

The Rubber Division of the Civilian Production Administration recently revealed the amount of United States' tire exports to Canada during the war years, 1942 to 1945. Of the 57,500,000 units for passenger cars and 57,000,000 for trucks and busses produced in the United States during these years, shipments to Canada totaled only 3,546 passanger car and 2,700 truck and bus tires. Expressed in percentages of United States production, exports of bus and truck tires were five one-thousandths of one per cent and exports of passenger car tires were less than 66 ten-thousandths of one per cent during the 1942 to 1945 period.

Introduce VanWax 40

VanWax 40, a clear wax emulsion suitable for use on rubber products of any color, has been introduced by the R. T. Vanderbilt Co., Inc., 230 Park Ave., New York 17, N. Y. The company reports that the new wax emulsion can intensify the color of rubber products, cover up discoloration acquired in processing, offer protection from sunlight and dirt in shipment and display, and cover up bloom. The emulsion may be applied to rubber products by spraying, dipping, brushing and wiping. One gallon of VanWax is said to cover 2,000 to 3,000 square feet. It dries in 10 to 20 minutes at room temperature.

ASTM Moves to New Building

The American Society for Testing Materials has moved its headquarters to 1916 Race St., Philadelphia 3, Penna. The new headquarters are located in a building which was purchased and remodeled through contributions made by many of the companies and individuals active in the society's work. The new telephone number is RIttenhouse 5315.

Stevens Promoted by Hall

Thomas L. Stevens

Thomas L. Stevens, a member of the C. P. Hall Co. for sixteen years, has been named vice-president of the company, succeeding the late Arthur E. Warner. A graduate of Akron University, Mr. Stevens began his career in the rubber industry with the Firestone Tire & Rubber Co. in 1927. Three years later he joined the C. P. Hall Co., first serving as warehouse manager and then as a sales representative. He is a past chairman of the Akron Rubber Group.

Surety Rubber Suffers Fire

Considerable damage to one of its dipping rooms, as well as to one of its mixing rooms, was suffered by the Surety Rubber Co. as a result of a fire at its Carrollton, Ohio, plant last month. Total damage was estimated at $60,000. As a result of the fire, production of linemen's rubber gloves is expected to be halted for the next few months, although repairs are already in progress. Several thousand porcelain glove forms were destroyed.

Firestone Purchases Plant

Firestone Tire & Rubber Co. has purchased for $3,400,000 the government-owned plant at Des Moines, Iowa, which the company operated during the war to produce heavy duty military tires and tubes. The company plans to produce tractor and earth-mover tires at the plant.

Chipco Opens New Office

Chipco Rubber Co., dealer in scrap rubber, has announced the opening of permanent quarters at 55 West 42nd St., New York 18, N. Y. The new telephone number is LOngacre 5-6631. G. Jatinen is owner of the company.

Offer Perbunan 18

Perbunan 18 is the newest polymer in the Perbunan family featured by Stanco Distributors, Inc., 26 Broadway, New York 4, N. Y. This polymer was developed during the war to meet the demands of the aircraft industry for a material which could be used with hydraulic fluids yet remain flexible at extremely low operating temperatures. Its properties suggest many specialized applications. Perbunan 18, now made non-staining, differs from Perbunan 26 in some of its vulcanizate properties, but it is compounded and processed in much the same manner. Its low temperature characteristics make it particularly useful in all automotive and aircraft applications where flexibility at low operating temperatures is vital. Due to its non-staining properties, it is also recommended for food-handling equipment, as well as for items where both oil resistance and color are desired.

Buys Thermoid Coast Plant

Consolidated Products Co., Inc., 15 Park Row, New York 7, N. Y., dealers in chemical and rubber machinery, has purchased the rubber plant of Thermoid of California, Inc., at South Clarence St., Los Angeles, Calif. The plant, located on three acres with about 100,000 square feet of manufacturing space, formerly housed the Grizzly Manufacturing Co., which manufactured rubber belting, brake linings, hose and molded products. Consolidated is planning to re-sell the plant to a rubber manufacturer. Should these plans fail, however, it is expected that the machinery will be liquidated and distributed to other rubber plants. The property then will be offered to new interests.

To Manufacture Golf Balls

The MacGregor Division of Sport Products, Inc., Cincinnati, Ohio, is planning the early manufacture of a complete line of golf balls and is currently engaged in building a plant for such purposes at 4851 Spring Grove Avenue in Cincinnati. Some equipment has already been secured for the new plant and it is hoped to start production some time this summer. C. C. Ryden, former head of the Ryden Manufacturing Co., has joined the company as production engineer. He will be in charge of all operations.

SAE Plans June Meeting

The Society of Automotive Engineers has scheduled a Summer Meeting at the French Lick Springs Hotel, French Lick, Ind., from June 2 to 7 to discuss engineering requirements for future development of automotive transportation and industrial applications of war-developed techniques. Included among the papers to be presented is "Classification of Rubber and Rubber Compounds," by G. H. Swart, of the General Tire & Rubber Co., Akron.

CANADIAN NEWS

In a review of the rubber industry for 1944, the General Manufacturers Branch of the Canadian Department of Trade and Commerce has revealed that in that year Canadian concerns manufacturing rubber tires, rubber footwear and miscellaneous rubber goods numbered 56, with 32 plants located in Ontario, 19 in Quebec, 2 in British Columbia, and 1 each in Manitoba, Alberta and Saskatchewan. These plants employed 21,421 people who received $35,978,717 in salaries and wages and produced goods valued at $169,511,036, from materials costing $82,187,888. The plants in Ontario employed over 76 per cent of the people engaged in the industry and produced over 85 per cent of the entire output.

According to the review, the value of production in 1944 was $39,353,256 higher than in the previous year. The production value of casings and tubes rose from $64,720,133 in 1943 to $70,521,791 in 1944. The output of footwear increased from 11,984,908 pairs in 1943 to 14,038,409 pairs in 1944, with a corresponding rise in value from $14,495,794 to $17,717,137. The production value of miscellaneous rubber goods also increased from $50,941,853 in 1943 to $81,272,108 in 1944.

The consumption of synthetic rubber in 1944 amounted to 55,465,102 pounds, including 51,629,539 pounds of Buna S, 1,660,281 of Butyl, and 2,175,362 pounds of other types. The total amount of synthetic rubber used in the manufacture of casings and tubes in 1944 totaled 43,085,047 pounds.

Canadian Tire Corp., Ltd., has reported a net profit for 1945 of $158,860, which is equal to $1.58 a share, and which compares with $144,098, or $1.44 a share, for the previous year. At the end of 1945, the company's net working capital amounted to $1,041,909.

Goodyear Cotton Company of Canada, a subsidiary of the Goodyear Tire & Rubber Company of Canada, in Saint-Hyacinthe, Quebec, celebrated its 20th anniversary as an organization on April 26-27. Goodyear officers from Akron, Ohio, and New Toronto, Canada, attended the festivities which were climaxed with a banquet at which 24 employees of the company with 20 years of service were awarded 20-year service pins.

Polymer Corp., which operates the government-owned synthetic rubber plant at Sarnia, Ont., has acquired the St. Clair Processing Corp., formerly a subsidiary of Imperial Oil, Ltd. With the transfer completed, Floyd C. Lantz, formerly manager of the St. Clair concern, has been appointed assistant general manager of the Imperial Oil refineries, and Dr. J. L. Huggett, formerly assistant manager of the St. Clair concern, has been appointed superintendent of Imperial's Sarnia refinery.

J. R. Nicholson, general manager of the Polymer Corp., Sarnia, Ont., has returned to Canada after completing a tour of the United Kingdom, France, Sweden and other countries in connection with contracts for Canada's future output of synthetic rubber.

Canadian General Rubber Co., Ltd., Galt, Ont., has purchased lots from the city of Galt within a short distance from its factory and plans during the coming spring to erect 50 houses for sale or rent to its employees.

K. E. Pierce, who has been associated with the Dominion Rubber Co., Ltd., since 1933, holding various positions in the treasurer's department, has been appointed general credit manager of the company.

Production executives of the Peterborough Works of the Canadian General Electric Co., recently made a tour of inspection of the tire factory of the Dominion Rubber Co., Ltd., in Kitchener, Ontario. The visit was in the nature of an annual recognition by Canadian General Electric of the company in which it has placed an installation of outstanding importance, the installation in this case being special machinery to increase the output of tires and tubes.

Synthetic golf balls will be officially adopted for use in the Canadian Open Championship which is to be played over the course of the Beaconsfield Golf Club in Pointe Claire, Quebec, from June 27 to 30, according to the Royal Canadian Golf Association. The R.C.G.A. pointed out that players were permitted to use any ball they liked at last year's Canadian open, but balls of natural rubber will not be allowed this year.

Several new appointments have been announced by the Polymer Corp., Sarnia, Ont. A. P. Mechin, formerly senior executive of Imperial Oil, Ltd., has been named manager of the Sarnia plant, while L. D. Dougan has been appointed assistant manager, and E. K. Lewis, production manager.

R. Harold Smyth, advertising manager of Dominion Rubber Co., Ltd., Montreal, Quebec, has been elected president of the Technical Advertisers Association of Montreal.

"Lastex" yarn, manufactured by Canadian Lastex, Ltd., Montreal, Quebec, until it became necessary to suspend operations early in 1942 due to the latex shortage, is again being produced by the company.

Polymer Corp., Sarnia, Ont., has launched a $2,000,000 improvement program with the erection of a butalene extractor tower 140 feet high. Installation of the new tower is said to be only the beginning of a series of improvements calculated to keep the government-owned synthetic rubber plant abreast of the latest developments in the manufacture of synthetics and to assure the maximum production required to meet increasing demands.

Dominion Rubber Co., Ltd., has opened a sales office in Windsor, Ont., to handle the company's line of mechanical goods, tires, textiles and rubber dispersions. The new office, under the direction of D'Arcy F. McConvey, is located in the Guarantee Trust Building, 176 London St. West.

Edgar H. Snider, manufacturers' sales manager of the Firestone Tire & Rubber Company of Canada, died on April 10 of injuries suffered when the automobile he was driving collided with a truck near Montreal. Mr. Snider was stationed in Ottawa during the war as a representative of his company.

New Polymer Science Journal

A new journal, devoted to the advancement of fundamental knowledge of the physics and chemistry of polymers, is being published bi-monthly by Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y. Known as the *Journal of Polymer Science,* it will offer to scientific workers in the polymer field an opportunity to report experimental and theoretical contributions through a centralized medium. Priced at $8.50 a year, the new journal will contain, in addition to original papers, news articles, brief communications to the editor and book reviews. The first two issues contain articles written by Maurice L. Huggins, George Goldfinger, Charles C. Price, Thomas S. Gardner and many others. The *Journal of Polymer Science* is an outgrowth of, and a successor to, the *Polymer Bulletin* which has ceased publication.

Vinylite Floor Covering

Vinylite plastic floor covering, developed through the joint cooperation of the Bakelite Corp. and Delaware Floor Products, Inc., Wilmington, Del., will be manufactured by the latter company. This new product will be produced in both yard goods and tile form in a range of solid colors and marbles. Tests on the new floor covering are said to indicate remarkable wearing properties, no need for polishing and impermeability to alkalis, oils, greases and acids.

LOS ANGELES NEWS

Charles Lamb, vice-president and superintendent of the West American Rubber Co., 410 North Avenue 19, Los Angeles 31, Calif., recently completed his fiftieth year in the rubber industry. At the age of 15, Mr. Lamb started his career with a subsidiary of the Dunlop Tire & Rubber Co. in England. In 1905 he moved to Canada, where he became head mechanical calender man for the Canadian Rubber Co. in Montreal. He moved to San Francisco in 1907, and became superintendent of the Bowers Rubber Co. He remained with Bowers until 1917, when he accepted the position of superintendent of the Cincinnati Rubber Mfg. Co. in Cincinnati, Ohio. In 1920 he joined the staff of the West American company, and has been with that firm ever since. His son, Charles Lamb, Jr., is the head of the Lamb Rubber Corp., Glendale, Calif.

Charles J. Roese, development manager of the Los Angeles plant of the Goodyear Tire & Rubber Co., will retire on August 1 after thirty years of service with the company. Mr. Roese joined Goodyear at Akron soon after graduating from Cornell University in 1916. He was transferred to the technical service department of the Los Angeles plant when it was completed in 1920. In 1928 he returned to Akron as division superintendent in Plant 2. Ten years later he returned to the Los Angeles plant, and has been there ever since.

Following his retirement, Mr. Roese plans to spend a great deal of time on his ranch near San Dimas, Calif., about 30 miles east of Los Angeles. He has always been active in the Los Angeles Rubber Group, having served as chairman for one year.

C. P. Hall Co. has opened offices in San Francisco on Third St., with C. H. Sherman as manager.

R. E. Hutchinson, of the Firestone Tire & Rubber Co., reports that his son, Charles, has been discharged from the Army after serving for 41 months, a good portion of this time as a weather observer in the far north. He is now attending U. C. L. A. where he is studying business administration.

Dick Hucks, who was chairman of the Los Angeles Rubber Group in 1935, and is now employed by the Government in connection wtih synthetic rubber plants throughout the country, was in Los Angeles this month on an inspection trip.

Bob Abbott, of the C. P. Hall Co., reports that his son, Bob, Jr., has returned from the South Pacific, where he served on a mine sweeper. He expects to be discharged on July 2.

P. E. Rice, factory manager of the Los Angeles plant of the U. S. Rubber Co., expects to return to Los Angeles this month after visiting Detroit, where he attended the safety conference of the Office of Rubber Reserve. He also visited New York and the main plant of Naugatuck Chemical in Naugatuck, Conn.

Phil Drew, of the Goodyear Tire & Rubber Co., has been spending the last few months in Akron, getting ready for his new position as development manager of the company's Los Angeles plant.

Monroe Byers, recently discharged from the Navy with the rank of lieutenant and previously associated with the Goodyear Tire & Rubber Co. in Los Angeles as a compounding chemist under R. E. Hutchinson, has returned to his old department at Goodyear.

Goodyear Set to Produce Homes

Goodyear Tire & Rubber Co., Akron, has revealed that its subsidiary, Wingfoot Homes, Inc., is ready for the mass production of 48,900 two-bedroom homes annually, if necessary materials and equipment are readily forthcoming. First developed in 1942, the Wingfoot homes have been produced on a limited scale during the past twelve months.

Transferred to West Coast

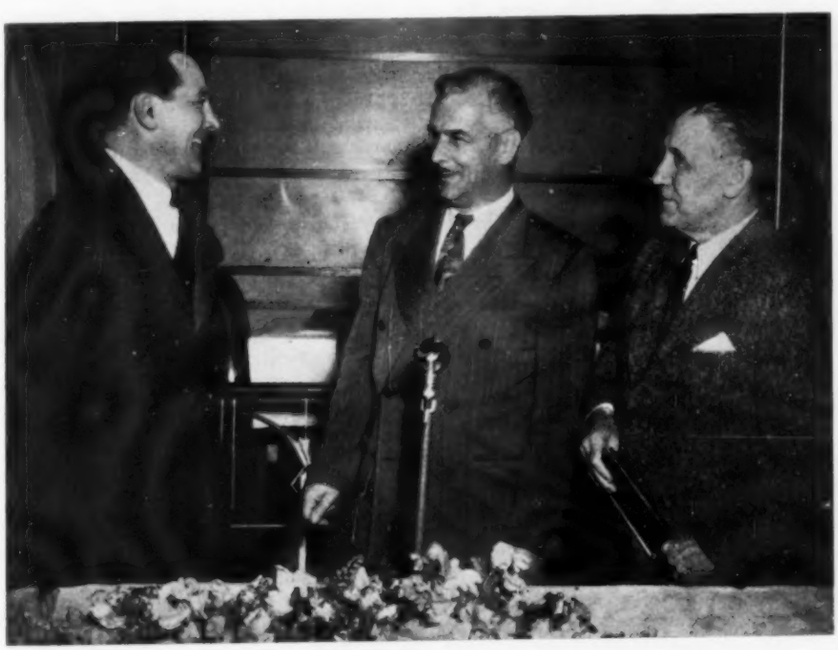
Ray E. Bitter, formerly midwestern territory technical service engineer for Hycar of the B. F. Goodrich Chemical Co., has been named sales representative on the Pacific coast, with headquarters at 1248 Wholesale St., Los Angeles 21, Calif. Mr. Bitter will handle sales of Hycar and Geon polyvinyl materials in states west of the Rocky Mountains as well as Texas. He will be succeeded in the midwestern post by Howard E. Anderson, who has been a salesman of reclaimed rubber for the past thirteen years.

Goodrich Plans Mexico Plant

Plans for the construction of a synthetic rubber plant in Mexico by the B. F. Goodrich Co. to manufacture the 5,000 tons needed annually by that country have been reported by numerous sources. The first announcement of Goodrich's intentions was made in Mexico City by President Avila Camacho after he met with John L. Collyer, president of the Goodrich organization. Goodrich's affiliate, Cia. Hulera Euzkadi, is located in Mexico City and is the largest rubber plant in Mexico.

Changes Corporate Name

Haartz-Mason-Grower Co., 270 Pleasant St., Watertown 72, Mass., has changed its corporate name to Haartz-Mason, Inc. Management, personnel and location of the concern will remain unchanged. Jesse H. Mason is president and general manager of the concern.



The above photograph, taken at the meeting of the Los Angeles Rubber Group held on February 5th, which was sponsored by the Firestone Tire & Rubber Co. of California, shows, left to right, Leonard K. Firestone, Curt Wolters, of U. S. Rubber, associate chairman of the group, and "Brownie" Carslake, head of the Firestone racing department. Mr. Carslake was the principal speaker at the meeting.

OBITUARIES

George S. Hayes

George Shapleigh Hayes, director and purchasing agent of the Okonite Co., died of pneumonia on May 3 at the Community Hospital in Montclair, N. J. He was 81 years old. Born in Somersworth, N. H., Mr. Hayes studied at Glens Falls (N. Y.) Academy.

After participating in a number of business ventures in Boston, Mass., Denver, Colo., Lincoln, Neb., and New York City, Mr. Hayes joined the Okonite Co. in 1911 and was assigned to purchasing and managing. Sent to British Guiana to manage one of the company's rubber plantations, he remained there until 1918, when the plantation was sold. On his return to the United States he was made purchasing agent for the company. He was elected a director in 1923 and had been active in business until his death.

Mr. Hayes was also purchasing agent for the Okonite-Callender Cable Co., Inc., of Paterson, N. J., and the Hazard Insulated Wire Works Division of Okonite in Wilkes-Barre, Penna. He was a member of the Pennington Club of Passaic, N. J., and a Mason. A widow, son and daughter survive.

Gustav Kush

Gustav Kush, retired rubber expert and inventor, died on May 10 in Montclair, N. J., after a long illness at the age of 89. Born in Germany, Mr. Kush was associated with the U. S. Rubber Co. for many years and was called upon by the United States Government during the first World War for advice in the rubber crisis. In the 1870's he worked on Panama Canal construction for the de Lesseps Co. Mr. Kush served in the Navy during the Spanish-American War and was sent to Havana to help raise the battleship Maine. He favored grafting of rubber-producing guayule plants onto native cactus so that this country might have an independent supply. Three daughters survive.

Eugene H. Clapp

Eugene H. Clapp, treasurer and director of the New Jersey Rubber Co., died suddenly on March 18 in Swampscott, Mass., at the age of 74. Mr. Clapp was also an officer of the Penobscot Chemical Co. and the Tilestone Hollingsworth Co. Born in Boston, Mass., in 1872, he was graduated from the Boston English High School and the Massachusetts Institute of Technology. He was a member of the Massachusetts Lodge AF & AL, Joseph Warren Commandery KT, Algonquin Club, Beacon Society, Eastern Yacht Club, First Corps Cadets Veterans Association, and a number of country clubs.

Raymond S. Crawford

Raymond S. Crawford, manager of the Rubber Heel and Sole Manufacturers Association, died on April 23 of a heart attack suffered on board a New York Central train while en route to his home in Bronxville, N. Y. He was 66 years old. Mr. Crawford, formerly a vice-president of the Victor Products Corp., Hagerstown, Md., belonged to the Bronxville Field Club and the Westchester Country Club, and was an elder of the Dutch Reformed Church of Bronxville. A widow and son survive.

Harold G. Donham

Harold G. Donham, executive vice-president of the United Shoe Machinery Co., died in Framingham, Mass., on April 13 at the age of 70. Born in Portland, Maine, Mr. Donham was graduated from Amherst College and in 1899 from the Harvard University Law School. He became associated with the United Shoe Machinery Co. in 1900 and served as one of its counsel and later as secretary. He was named executive vice-president in 1939. A widow and two daughters survive.

Guy M. Collette

Guy M. Collette, formerly manager of the old Lambert Tire & Rubber Co., died on April 25 in City Hospital, Akron, Ohio, after a week's illness, at the age of 63. Born in Akron, Mr. Collette attended Crosby School and studied at Buchtel Academy. Before being named general manager of the Lambert concern in 1921, he was associated with the Diamond Rubber Co. and the Firestone Tire & Rubber Co. A widow survives.

Represents Erie Engine

Associated Machinery & Products, 60 Branford Place, Newark 2, N. J., recently organized by Sidney M. Fauer, as reported in our December, 1945, issue, represents the Erie Engine & Manufacturing Co., manufacturers of rubber and plastics machinery, through the H. E. Stone Supply Co. The new firm also deals in used and rebuilt machinery for the rubber, plastics and allied trades.

Goodman Joins Press Textile

Sidney J. Goodman, recently discharged from the United States Coast Guard where he served as a combat correspondent, has joined the Press Textile Co., 1457 Broadway, New York 18, N. Y., as an equal partner. The concern dyes and finishes industrial cotton fabrics.

Multi-Functional Extenders

Two new types of multi-functional extenders for GR-S and neoprene have been developed and introduced by Harsyd Chemicals, Inc., Holland, Mich. HC-5, a tan, translucent resin having a wax-like consistency, a specific gravity of approximately 1.08, and a softening point between 155° and 175° F., is compatible with GR-S, while HC-22, a brown translucent resin, is intended for neoprene. The latter has a specific gravity of approximately 1.0, and a softening point between 130° and 140° F. HC-5 also functions as a secondary accelerator. Activated by primary acidic accelerators, it is reported not only to permit reduction in amount of the primary accelerator but to result in better stocks due to the reduction in persistent accelerator. HC-22 may be used to replace magnesia as a curing agent for neoprene.

ASTM Schedules Annual Meeting

The 49th annual meeting of the American Society for Testing Materials is scheduled to be held from June 24 through June 28 at the Hotel Statler in Buffalo, N. Y. In addition to the 23 formal technical sessions there will be more than 200 meetings of the society's technical committees. More than 150 technical papers and reports are scheduled. A symposium on "Fatigue and Spectroscopic Light Sources" will be held on June 25, and one on "Oil Procurement Practices" on June 26. The Edgar Marburg Lecture on June 26 is to be delivered by Dr. J. J. Mattiello, of the Hilo Varnish Corp., on "Protective Organic Coatings as Engineering Materials."

Railroad Uses Trade Journals

For the first time in its history, and probably for the first time for any American railroad, the Union Pacific Railroad has launched an extensive advertising program in trade journals. The campaign, which utilizes full pages employing the theme "A Salute to American Industry," will run in more than 100 such journals, representing 72 different industries. The decision to inaugurate this advertising campaign followed the conclusion of Union Pacific's series of network radio shows titled "Your America." The campaign will have a distinct freight solicitation flavor.

Buffalo and Ontario to Meet

A joint meeting of the Buffalo Rubber Group and the Ontario Rubber Section of the Chemical Institute of Canada is scheduled to be held on June 5 at the General Brock Hotel, Niagara Falls, Ontario. At this writing, the speaker of the evening has not yet been announced. E. C. Siverson, of the Buffalo Weaving and Belting Co., 260 Chandler St., Buffalo 7, N. Y., is chairman of the Buffalo Rubber Group.

Dutch Institute Booklets

According to letters received from Dr. A. Van Rossem, director of the Rubber-Stichting, now known as the Rubberinstituut T.N.O. (Netherlands Rubber Institute), with headquarters at 67 Julianalaan, Delft, Holland, the Rubber-Stichting operated throughout the period of German occupation, although its activities were somewhat curtailed. During the 1941-45 period, the organization continued to issue its technical booklets, some in English, some in French, and some in Dutch. A number of these booklets have since been received, nine of them in English, as follows:

Theory of the Absorption of Sound by Compressible Walls with a Non-Porous Surface-Layer, by C. W. Kosten and C. Zwikker (No. 24).

Measurements of the Absorption of Sound by Porous Rubber Wallcovering Layers, by C. W. Kosten and C. Zwikker (No. 29).

Extended Theory of the Absorption of Sound by Compressible Wall-Coverings, by C. W. Kosten and C. Zwikker (No. 30).

Note on the X-Ray Investigation of the Calender Effect in Rubber Sheets, by J. M. Goppel and A. Van Rossem (No. 33).

Vulcanization of Rubber with Synthetic Resins, by A. J. Wildschut (No. 36).

The Stress-Strain Relation of Natural and Synthetic Rubbers, by A. J. Wildschut (No. 38).

Pseudo-Plastic Phenomena with Vulcanized Rubber, by A. J. Wildschut (No. 42).

The Vulcanization of Rubber with Phenol Formaldehyde Derivatives—I and II, by S. van der Meer (Nos. 47 and 48).

Four publications issued in French have also been received, all of them being reprints of material originally appearing in *Revue Generale du Caoutchouc,* the titles being as follows:

Coussins en Caoutchouc Spongieux: Mesures de Temperature en Cours D'Emploi (Sponge Rubber Cushions: Determining Temperature in Use), by W. Gaade and R. Houwink (No. 34).

Le Systeme Latex-Argile Colloidal: III: Une Correction a Propos du Reinforcement (The Latex-Colloidal Clay System: III: A Correction Concerning Reinforcement), by A. Van Rossem and G. van Nederveen (No. 35).

Sur les Modes de Combinaison du Soufre dans le Caoutchouc Vulcanise (On Methods of Combining Sulfur in Vulcanized Rubber), by G. J. van Amerongen and R. Houwink (No. 37).

Un Perfectionnement a la Methode pour la Determination Directe de l'Absorbtion d'Oxygene par le Caoutchouc (An Improvement on the Method of the Direct Determination of Oxygen Absorption by Rubber), by G. J. van Amerongen.

Aetna Scientific Co., manufacturers of stills and sterilizers, has moved to a newly constructed plant in Everett, Mass.

All-Rubber Toy Automobiles

Gift Craft, 666 Lake Shore Drive, Chicago 11, Ill., has introduced a new line of toy rubber automobiles. The automobiles are mounted on movable rubber

wheels and can be secured in red, green and blue. They are of sturdy construction and are covered with a non-toxic flexible paint.

Organize Chemical Coating Corp.

Formation of the Chemical Coating Corporation, a new $200,000 organization to manufacture and sell specialized industrial coatings, lacquers and technical finishes, has been announced by Edward H. Christ. At the same time, Mr. Christ, who heads the new company as president, announced his resignation as vice-president, general sales manager, and a director of the Stanley Chemical Co. Chemical Coating Corp. will maintain headquarters in New Britain, Conn., and a plant will shortly be constructed in that area.

Newly designed textile machinery, fabricated specifically for the treatment of textile yarns or rovings made of various natural or synthetic fibers developed by Riverside & Dan River Cotton Mills, is to be manufactured by Walter Kidde & Co., Belleville, N. J. Certain refinements evolved by the Kidde engineers are being incorporated in the new machine.

Neolite shoe soles, introduced by Goodyear a year ago, have been made available for the shoe repair market. They may be obtained in black, brown, red and white, and can be stitched or cemented.

A synthetic rubber hose reinforced with Fiberglas inner braid, through which hot plastic paint can be run at 300°F., has been developed by DeVilbiss. This hose is now being supplied to the U. S. Navy to deliver the hot paint in a spraying operation on ships' hulls, but has possibility of civilian application.

Union Bay State Chemical Co., 50 Harvard St., Cambridge 42, Mass., is manufacturing a neoprene putty (N800) for filling neoprene and other synthetic rubber parts, for repairing wire cable, and as a binder for caulking compounds. It is a two-part neoprene base formula and bonds without primers.

New Air Ducts Developed

Out of wartime research on gas masks for horses has come a new type of flexible, corrugated duct, made of fabric, synthetic rubber and plastics, which is expected to be widely used in the future for conveying air, dust, fumes and abrasive substances on mechanical equipment and in industrial plants. The duct was developed during the war by the U. S. Rubber Co. Called Multi-Flex, the ducts are light, durable and easy to install. They can be twisted and turned around obstructions, saving installation time formally required to cut and shape metals. If accidentally crushed they resume normal shape as soon as pressure is released. Flexibility is obtained by means of corrugations. They will withstand temperatures up to 350° F. and down to 70° below zero.

Mason Joins Phillips Laboratory

L. G. Mason, formerly development manager of mechanical rubber goods at the Seiberling Rubber Co., Barberton, Ohio, and previously associated as assistant chief chemist with the Rubber Division of Jenkins Bros., Bridgeport, Conn., for one year, and in various capacities with the B. F. Goodrich Co., for 14 years, has joined the Phillips Petroleum Co. as manager of the new Philblack Sales Service Laboratory, 330 Maiden Lane, Akron. This laboratory, recently acquired from the Hycar Chemical Co., will be used entirely for development work on Philblack.

Dreyfus Co. Moving Plant

The L. A. Dreyfus Co., manufacturers of gutta-percha specialties, will soon move its factory from the present location in Rosebank, Staten Island, N. Y., to Plainfield, N. J. The company, which was founded in 1908 and employs between 120 and 150, is erecting three new buildings in Plainfield. According to Walter A. Tyler, president of the firm, the move was being made to escape a tax situation in New York State which he described as "particularly onerous."

Amecco Sells Rochester Plant

Amecco Chemicals, Inc., manufacturer of synthetic organic chemicals, has sold its Rochester, N. Y., plant, and manufacturing operations formerly carried out at this plant are being transferred to Dover, Ohio, and Henderson, Nevada, where production facilities will be greatly expanded. In the meantime, customers are being supplied from warehouse stocks. Amecco Chemicals maintains headquarters and sales offices at 60 East 42nd Street, New York 17, N. Y.

A new line of Keds, featuring the Shock-Proof Arch Cushion, has been introduced by U. S. Rubber. The new line consists of eleven shoes in four styles.

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Valvair valves are new in design and principle, standard valves have been operated more than two million times without leak with air pressure exceeding 100 lbs. They are designed for indefinite life and exceptionally hard service.

They are compact—they do not have metal seals—the body is made of cast bronze and steel parts are made of stainless steel—they will not corrode.

They are made in five sizes—¼, ⅜, ½, ¾ and 1 inch—and in two-way, three-way, and four-way types. They can be furnished in eight or more different designs—knob, lever, foot, cam, clevis, single diaphragm, double diaphragm or solenoid operated.

They will control air efficiently up to 200 lbs. pressure with a very light movement. The area through the valves is equivalent to pipe size with minimum pressure drop. Write for literature.

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NEW EQUIPMENT

H-P-M Turbojector Molding Machine

Representing a new method for production molding of both natural and synthetic rubber, the Turbojector Molding Machine has been introduced by the Hydraulic Press Manufacturing Co., Mount Gilead, Ohio. The H-P-M Turbojector, by means of a motor-driven screw, injects rubber into a hydraulically clamped

mold, while the entire machine cycle is automatic. The new machine is a completely self-contained unit, the machine base containing pumps and valves for controlling all hydraulic actions. The only connections required to put it into operation are electric power and cooling water.

The driving mechanism of the injection unit consists of a 10 h.p., four-speed electric motor and train of gears, directly connected to the injection screw. The rubber in strip, pellets, ribbon or rod form is fed into the injection cylinder by the feed screw. As the rubber advances, the feed screw meshes with a set of specially designed, free running baffle gears, which act as pressure locks. The action of the screw and baffle gears forces the rubber into the nozzle. The frictional heat produced in the injection chamber raises the temperature of the rubber as high as 300°F. Additional heat is secured at the nozzle by employing an electrical resistance band heater. This pre-heating accounts for the rapid curing cycles which can be obtained.

Maximum nozzle contact pressure during injection is approximately 6,000 pounds, permitting injection pressures as high as 18,000 psi on the material to be molded. The entire injection unit is pivoted on the stationary mold clamp platen and is hydraulically tilted, thus permitting the nozzle to engage the mold only during injection. To facilitate changing of molds, the injection head can be hydraulically tilted clear of the mold space.

Designed to produce a wide variety of mechanical goods, the H-P-M Turbojector is said to overcome many of the handicaps of conventional compression molding and to greatly reduce the over-all molding

cycle. For example, rubber bushings have been molded in 1½ minutes as compared with approximately 20 minutes required by conventional compression methods. Better physical properties of finished products is also claimed, such as greatly improved tensile strength in the case of "O" ring gaskets. Another feature of the machine is its large capacity, up to 8 pounls of rubber per "shot" having been molded experimentally.

Raytherm Dielectric Heater

A general purpose 5 k.w. dielectric heater, termed "Raytherm," has been introduced by the Industrial Electronics Division of the Raytheon Manufacturing Co., Waltham 54, Mass. The new unit is approximately 6 feet high, 2½ feet wide, 4 feet long, and weighs 1505 pounds. The cabinet is made of heavy-gaged sheet metal, ribbed for strength, while the frame features welded, structural shape framework. Double swinging doors are located on either side of the unit for access to rectifier, oscillator and output circuits. There is also a swinging door on the front

of the unit for access to the control relays and a sliding door on the front for access to the "set up" controls. All doors are provided with locks to prevent unauthorized use. Electrical specifications include: power supply, 230 or 460 volts, 3-phase, 60 cycles; maximum k.v.a. demand, 13.3; maximum k.w. demand, 12.2; h.f. power output rating, 5 k.w.; r.f. frequencies, 1.7, 3.4, 6.8, 13.6 megacycles; capacity range, essentially zero to approximately 6500 micro-microfarads. Uses of this new dielectric heater in the rubber field are said to include preheating prior to molding, vulcanization, devulcanization, setting and drying of foam sponge, drying of latex dipped cord, preheating of tire carcass prior to molding, and strip preheating in place of milling prior to extrusion.

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A supreme quality product for the rubber trade. Extremely fine state of division. Improves storage stability and resistance to scorching. A curing agent unexcelled for increased modulus, greater resilience, reduced heat build-up, lower compression set and retention of tensile strength during heat service.

LIGHT

A high quality product of greater density than "Extra Light," but high in MgO and low in impurities. An excellent value for many uses.

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NEWARK, N. J.—Chas. S. Wood & Co., Inc.
PORTLAND, ORE.—Miller & Zehrung Chemical Co.
ST. PAUL, MINN.—George C. Brandt, Inc.
SEATTLE, WASH.—Carl F. Miller & Co.
TRENTON, N. J.—General Supply & Chemical Co.

Allis-Chalmers Dielectric Heater

A new standard 2 k.w. (output) dielectric heater which operates on a frequency of 27 megacycles, and which is adaptable to the processing of rubber, has been introduced by the Allis-Chalmers Manufacturing Co., Milwaukee 1, Wisconsin. It is the first of a complete line planned by the company. Designed for

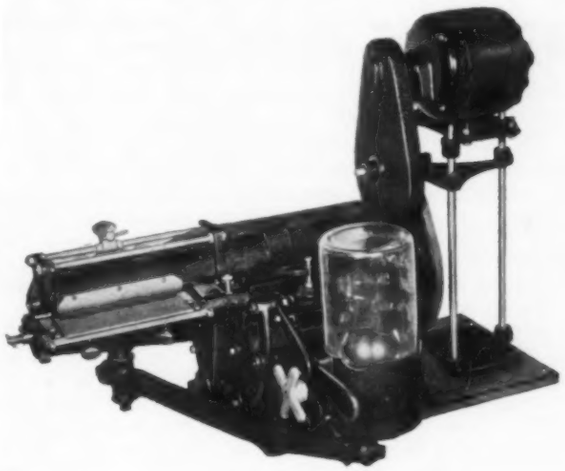
simplicity of control and ruggedly constructed for continuous industrial duty, the new heater employs proven circuits and methods to achieve the utmost reliability, according to the manufacturer. Frequency can be varied through a wide range by a front panel control and an automatic timer controls heat sequence from two seconds to 20 minutes as selected. An oven, containing electrodes easily set for any desired application, is completely shielded to eliminate undesirable radio frequency radiation. Filament of a long-life oscillator tube with simplified forced air cooling is protected by a time delay relay. Added protection is provided by an overload plate current relay. Industrial casters make the 30 by 25 by 37 inch two-tone grey cabinet semi-portable.

FOR EASY PROCESSING USE PHILBLACK A

FOR FURTHER DETAILS, SEE AD ON PAGE 126

Boston Latex Cementer

A latex cementing machine, which is said to apply any desired amount of cement evenly over the entire surface of materials, is currently being featured by the Boston Machine Works Co., Lynn, Mass.



The accompanying illustration shows the company's Model No. 7-LP. This model requires a bench space of approximately 33 inches, and weighs 121 pounds net and 161 pounds gross. Using ¼ h.p., it operates at 100 to 170 r.p.m. The motor drive is fitted to allow changes in pulleys. Sizes containing 4, 7 and 10-inch rolls are available. The company also has machines available for bench drive. Among other uses, the Boston Latex Cementer is adaptable for combining elasticized shoe cloth and upper stock, for backing unlined shoes, combining covered counters, tongue linings, applying reinforcements, etc.

No. 5 Mikro-Atomizer

A new mechanical, dustless, screenless pulverizer, especially suited for small quantity production, pilot plant or laboratory use, has been announced by the Pulverizing Machinery Co., Summit, N. J. Called the No. 5 Mikro-Atomizer, the new unit is exceptionally cool in operation. It is capable of reductions to ultra-fine particle sizes in the 1 to 25 micron range. Much smaller than the No. 6 Mikro-Atomizer, using only a 5 horsepower motor, this new mill employs the same basic principle with certain design changes for greater compactness and ease of handing.

The Mikro-Atomizer operates on an entirely new grinding principle, that of imparting a centrifugal force to each particle and opposing that force with an aerodynamic drag. The raw material, fed into the mill from the customary hopper, is first pulverized by rotating hammers, then carried by an air stream into a separator wheel whirling at 7,000 to 10,000 r.p.m. A fan adjacent to the separator wheel exerts just enough suction to draw out and discharge the finest particles. The coarser particles, increased in gravitational weight by the centrifugal force imparted by the separator wheel, resist the pull of the fan and drop back into the path of the hammers where they are beaten and rebeaten until reduced sufficiently to yield to the pull of the fan.

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REVIEWS

BOOKS

Advances in Colloid Science. Vol. II. Scientific Progress in the Field of Rubber and Synthetic Elastomers. Edited by H. Mark and G. S. Whitby. Published by Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y. 6 x 9 in. 454 pp. $7.00.

As indicated by the title, this second volume in the series of "Advances in Colloid Science" covers the chemistry and physics of natural and synthetic rubber and brings the scientific record up to date. The plan for this second volume was made by the late Dr. Elmer O. Kraemer, who felt that the quantity and importance of recent work in this field justified devoting an entire volume to it, a feeling with which rubber chemists and technologists will concur.

As in the first volume of this work (see RUBBER AGE, February, 1942, p. 384), the various sections are contributed by specialists in the field, both American and British. The current volume is divided into 9 sections, contributed by 13 authors. In addition, it includes an introduction by Dr. Whitby, one of the editors, and a biography of the late Dr. Kraemer. In an appendix, Dr. Mark, the other editor, briefly reviews some recent articles which are pertinent to the content of the various chapters of the book. Subject and author indexes are also included. Titles of the nine sections of the book, together with the authors of each, follow:

Second-Order Transition Effects in Rubber and Other High Polymers, R. F. Boyer and R. S. Spencer; *Crystallization Phenomena in Natural and Synthetic Rubbers,* Lawrence A. Wood; *The Study of Rubber-Like Substances by X-Ray Diffraction Methods,* C. W. Bunn; *The Thermodynamic Study of Rubber Solutions and Gels,* Geoffrey Gee; *Significance of Viscosity Measurements on Dilute Solutions of High Polymers,* R. H. Ewart; *The Kinetic Theory of Rubber Elasticity,* E. Guth, H. M. James and H. Mark; *Vulcanization,* E. Harold Farmer; *Rubber Photogels and Photovulcanizates,* Henry P. Stevens; *Reinforcing and Other Properties of Compounding Ingredients,* Donald Parkinson. Bibliographies appear at the end of each section.

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Soap In Industry. By Georgia Leffingwell and Milton Lesser. Published by Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y. 5½ x 8½ in. 204 pp.

This is a practical treatise which is designed to provide chemists, manufacturers, salesmen, industrial workers and students with many useful hints regarding the utilization of soaps in various manufacturing processes. Dozens of specific formulas are given and bibliographies appear at the end of each chapter. The book has 23 chapters in all, in addition to an introduction and a subject index. A chapter on the utilization of soaps in rubber production, including the preparation of butadiene-styrene and butadiene-acrylonitrile rubbers, is contained.

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Rubber in Engineering (American Edition). Published by Chemical Publishing Co., 26 Court St., Brooklyn 2, N. Y. 5½ x 8½ in. 258 pp., plus appendices. $5.50.

This is the American edition of the book originally issued by the British Ministry of Supply in London as part of its "Services Rubber Investigations." The research on which the publication is based was carried out by Imperial Chemical Industries, Ltd., on behalf of the Controller of Chemical Research of the British Ministry of Supply and the Directors of Scientific Research of the Ministry of Aircraft Production and the Admiralty. A complete review of the book will be found in RUBBER AGE, October, 1945, p. 118.

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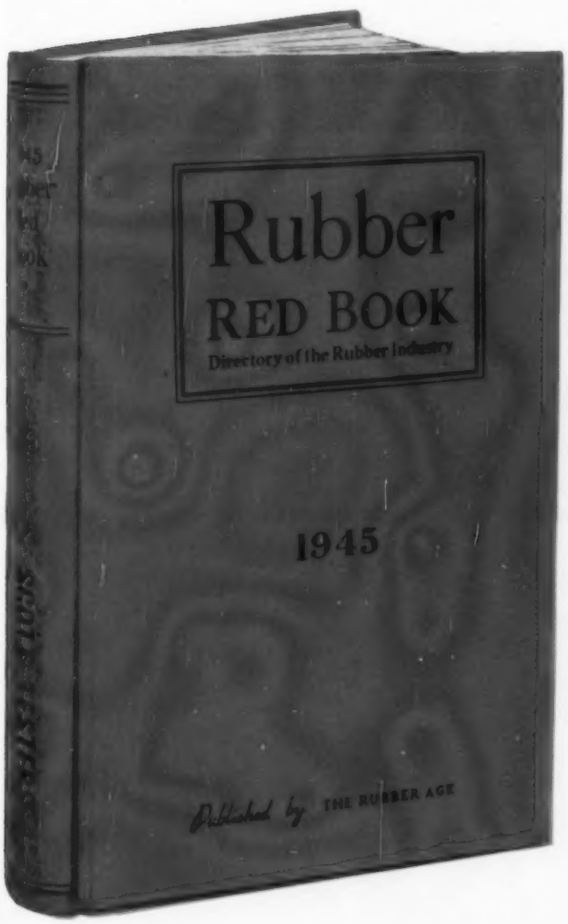
1945 Rubber Red Book

Directory of the Rubber Industry

The current edition is the largest issue ever published—696 pages—and contains the latest available data up to time of going to press. Thousands of changes and additions were made since the previous edition to bring every section up to date.

Copies have already been distributed to every rubber factory in the United States and to those who placed advance orders.



Summary of Contents

RUBBER MANUFACTURERS IN THE UNITED STATES—Alphabetical and Geographical Sections; Classified List of Rubber Products.

RUBBER MANUFACTURERS IN CANADA

RUBBER MACHINERY AND EQUIPMENT—Classified List and Addresses.

ACCESSORIES AND FITTINGS—Classified List and Addresses.

RUBBER CHEMICALS AND COMPOUNDING MATERIALS—Classified List and Addresses; Trade and Brand Names.

FABRICS AND TEXTILES—Classified List and Addresses.

CRUDE RUBBER AND RELATED MATERIALS—Classified List and Addresses.

SYNTHETIC RUBBER AND OTHER RUBBER-LIKE MATERIALS

RECLAIMED RUBBER—Manufacturers and Addresses; Rubber Reclaimers Ass'n. "Scrap Rubber Specifications."

SCRAP RUBBER DEALERS

RUBBER LATEX—Latex and Latex Compounds; Water Dispersions; Miscellaneous Processes; Latex Compounding Materials; Latex Machinery and Equipment.

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SUBJECT INDEX

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Colloid Chemistry: Theoretical and Applied. Volume VI. Edited by Jerome Alexander. Published by Reinhold Publishing Corp., 330 West 42nd St., New York 18, N. Y. 6 x 9 in. 1216 pp. $20.00.

The latest volume of this monumental work is divided into two parts, the first dealing with "General Principles and Specific Industries," and the second with "Synthetic Polymers and Plastics." The two sections contain 70 papers contributed by selected international specialists, 38 in the first and 32 in the second section. In addition, there is a general article on nuclear fission and atomic energy. As usual, there are excellent author and subject indexes.

The section on General Principles and Specific Industries contains several contributions of direct interest to the rubber chemist and technologist. These include "Rubber Latex Technology," by R. W. Albright and R. A. Lees; "Synthetic Rubber," by E. A. Hauser and D. S. le Beau; and "The Comparative Behavior of Carbon Black in the Reinforcement of Natural and Synthetic Rubbers," by H. A. Braendle. The section on Synthetic Polymers and Plastics includes chapters on nitrocellulose, cellulose acetate, coumarone-indene resins, polythene, polystyrene, dichlorostyrenes and their polymers, vinylidene chloride polymers, acrylic resins, alkyd resins, nylon, silicones, chlorinated rubber, and synthetic resin adhesives in general.

•

1945 Supplement to A.S.T.M. Standards. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna. In 3 Vols. 6 x 9 in. each. $4.00 each.

To keep up to date the biennially published book on standards, the A.S.T.M. in the intervening year issues Supplements to each part of the book. The 1945 Supplements, issued in three parts, give in their latest approved form some 230 specifications, tests and definitions which were either issued for the first time in 1945 or revised since their appearance in the 1944 book. Part I, on Metals, contains some 395 pages, and includes over 85 standards covering ferrous and non-ferrous materials. Part II, on Non-Metallic Materials (Constructional), has 250 pages, and covers 50 standards. Part III, on Non-Metallic Materials (General), contains 500 pages, with over 95 standards, including specifications and tests on rubber products, plastics, textiles, etc. The three 1945 Supplements, plus the Book of Standards, give a complete set of all A.S.T.M. specifications and tests, excepting those on chemical analysis of metals which are in a special volume. Heavy leather bindings for the Supplements are available on the additional payment of $2.00 for each part.

REMOVE THE NERVE WITH PHILBLACK A

FOR FURTHER DETAILS, SEE AD ON PAGE 126

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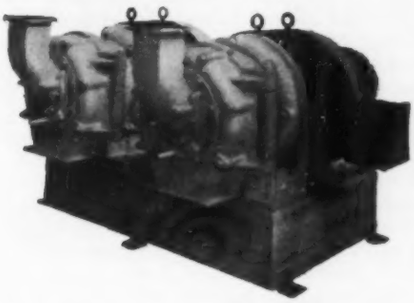

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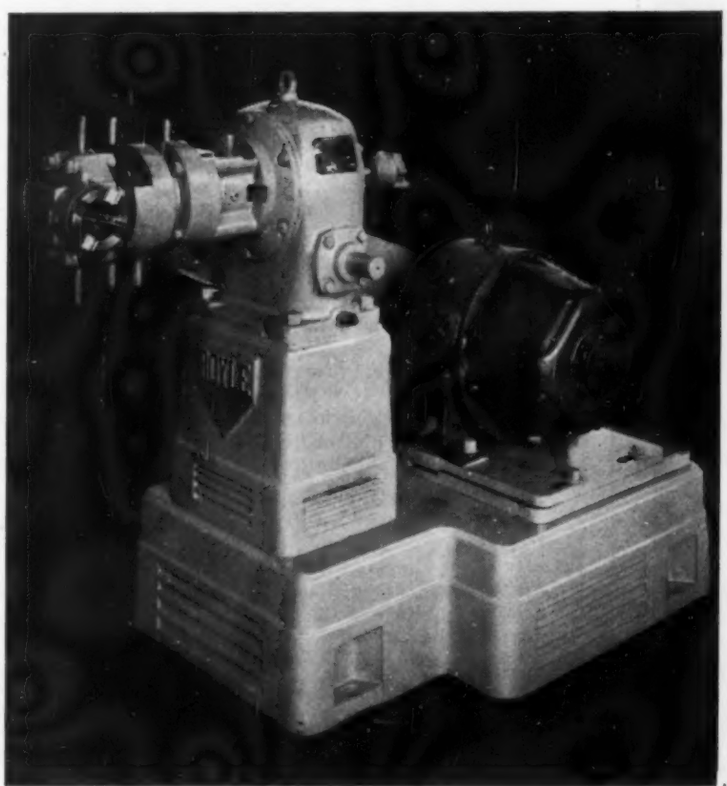

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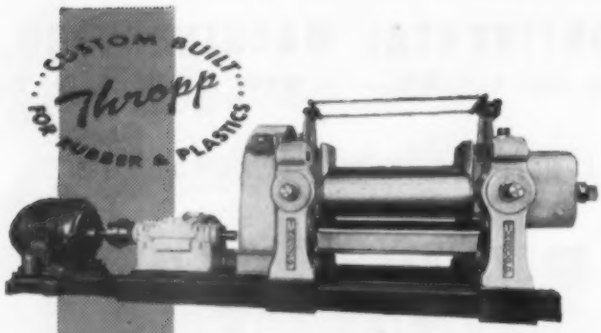

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Science and Scientists in the Netherlands Indies. Edited by Pieter Honig and Frans Verdoorn. Published by the Board for the Netherlands Indies, Surinam and Curacao. Available from G. E. Stechert & Co., 31 East 10th St., New York 3, N. Y. 7 x 10¼ in. 492 pp. $4.00.

Prepared under the auspices of the Government of the Netherlands Indies, this book presents a vivid picture of the development and status of a number of branches of the natural sciences, pure and applied, in the Netherlands Indies. It is not quite a complete history of science in that territory, since it was prepared during the war years when both the Indies and the mother country were enemy-occupied; nevertheless, it is a comprehensive report.

The work consists of original articles dealing with the development or status of various branches of science, reprints of similar accounts previously published elsewhere, a number of travel accounts and impressions by distinguished visitors, several shorter articles containing material of interest from the viewpoint of North American-Netherlands Indies relationships, and a list of scientific institutions, societies, and workers in the Indies at the time of the Japanese invasion.

Some seventy authors participated in the preparation of the volume, which contains numerous full page plates, many of them of considerable historical or artistic interest. It includes a special chapter on "The History of Rubber Cultivation and Research in the Netherlands Indies," prepared by T. A. Tengwall, as well as a report on "The Work of the West Java Research Institute in Buitenzorg," by Ch. Coster. As to the editors, Mr. Honig is a director of the Rubber Research Institute at Buitenzorg, while Mr. Verdoorn is Botanical Adviser to the Board for the Netherlands Indies.

■

1946 Modern Plastics Encyclopedia. Published by the Plastics Catalogue Corp., 122 East 42nd St., New York 17, N. Y. 8 x 11 in. 1390 pp. $6.00, domestic; $7.00, Canada and Foreign.

Formerly called the Plastics Catalog and now properly termed the Modern Plastics Encyclopedia, the latest edition of this work has been completely revised and brought up-to-date to make it the most comprehensive guide available to the manufacture and use of plastics materials. The current edition is divided into 12 basic sections including Plastics Panorama; Technical Data; Materials; Engineering Design; Molding, Extruding and Casting; Fabricating, Finishing and Assembly; Machinery and Equipment; Laminates and Vulcanized Fibre; Resin-Wood Products; Coatings; Synthetic Fibres; and Synthetic Rubber and Rubber-Like Plastics. In addition, there is a bibliography on books and articles, a glossary giving the official definitions of technical plastics terms, and a directory section listing the names, addresses and personnel of all categories of plastics manufacturers. A series of 10 separate charts, covering plastics properties, solvents, plasticizers, etc., is furnished with the Encyclopedia.

■

Hackh's Chemical Dictionary (Third Edition). Edited by Julius Grant. Published by the Blakiston Co., 1012 Walnut St., Philadelphia 5, Penna. 6½ x 9½ in. 925 pp. $8.50.

Completely revised and brought up-to-date, the latest edition of this standard encyclopedic dictionary of modern chemical terms contains over 57,000 definitions. A feature of the dictionary is the numerous original tables of important data, diagrams, portraits, illustrations, and other well delineated aids, all designed to give a clear understanding of various subjects, including physics, astrophysics, geology, mineralogy, botany, etc. The various chain reactions are illustrated by formulas, and the periodic chain is fully tabulated, including complete scientific data down to Element 96. The latest data on atomic disintegration is included, together with brief, clear statements of the theories, laws and rules of chemistry, accurate descriptions of elements, compounds, drugs, minerals, etc., and biographic sketches of scientists who have contributed to the development and progress of chemistry. Nomenclature and spelling follow the system adopted by the American Chemical Society and British practices.

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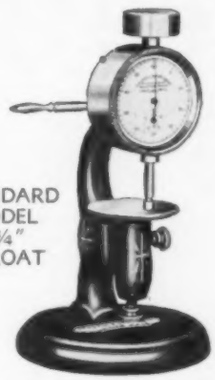

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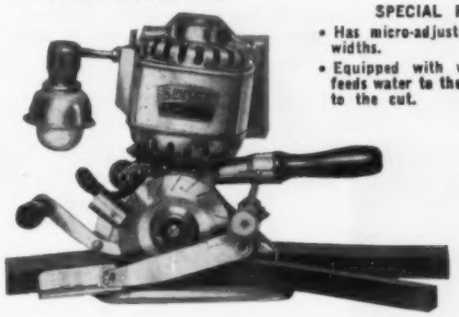

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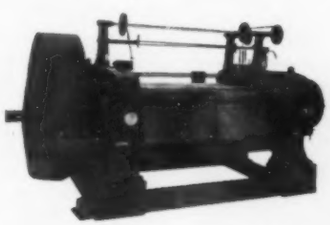

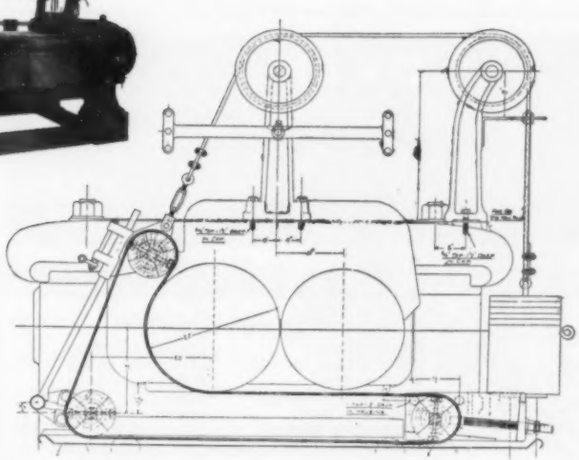

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Blaw-Knox Functional Spring Hangers and Vibration Eliminators. (Catalog No. 2026). Blaw-Knox Co., 1525 Pennsylvania Ave., N. S., Pittsburgh 12, Penna. 8½ x 11 in. 36 pp.

The conclusions of prefabricated power piping engineers regarding the design of piping layouts for flexibility are contained in this booklet. Abundantly illustrated with excellent drawings, photographs and charts, it gives many details concerning standard and special types and sizes of functional spring hangers and vibration eliminators, with instructions for their installation, and engineering information which will be of help when adoption of this type of support is under consideration.

•

Prater Dual Screen Pulverizers in the Process Industries. Prater Pulverizer Co., 1825 S. 55th Ave., Chicago 50, Ill. 8¼ x 10¾ in. 16 pp.

This booklet briefly describes and illustrates the construction of the Prater pulverizer and shows how it aids in the reduction phases of the process industries. Special sections are devoted to the soybean, distilling, meat by-product and ceramic industries. In addition it outlines the operating principles of the machine, describing (1) Standard or dual feeds; (2) Direction of the feed; (3) First reduction by breaker bars or knives; (4) Second reduction by crushers; (5) Third reduction by final sizing blades; (6) Final sizing by the screens; (7) Ease of screen change; (8) Power saving.

•

Piccoumaron Resins. Standard Chemical Co., Akron Savings and Loan Building, Akron, Ohio. 8½ x 11 in. 8 pp.

Chemical and physical characteristics of the company's para coumarone indene resins and their applications in rubber compounding are briefly described in this booklet. Some of the advantages in the use of the resins in synthetic rubber compounds are pointed out, including their use in tire stocks, calendering and extruding, rubber cements, insulation for wire and cables, and in the manufacture of reclaimed rubber. A list of the materials with which the resins are compatible, and a chart of the grades of the Piccoumaron resins, including their melting point, color and form, are also presented.

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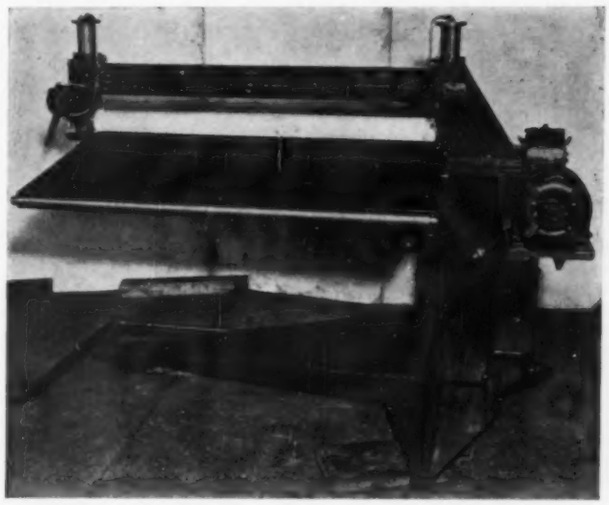

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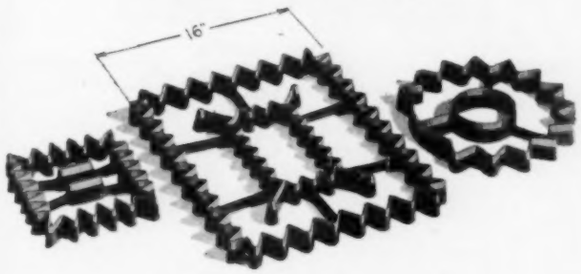

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MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK MAY 16, 1946

Natural Rubber

THE purchasing of rubber in Malaya since the liberation of that territory has been in the hands of the special purchasing unit representing the British Government. Since May 6, however, and until further notice, all available rubber from Malaya is being purchased by the Rubber Directorate of the British Board of Trade through the Rubber Trade Association of London from broker members of that association on guaranteed contracts on f.o.b. terms. At the same time it was announced that the Board of Trade will pay one shilling per pound for Malayan rubber instead of the previous price of 10 pence. This action brings the price into line with the 20¼ cents per pound, f.o.b., which the United States is paying for such rubber.

Although on first sight it appears that the British Government's decision to pay a slightly higher price for Malayan rubber was a concession, the London trade reports that actually it will receive slightly less than before. However, the change in the official method of buying the rubber is said to represent a step toward the freeing of controls and a mark toward re-establishing normal buying conditions. From these angles, it is welcomed in London rubber circles.

New York brokers, on the other hand, have received the news with mixed feelings. Some of these brokers have expressed the opinion that it is another step in the efforts of England to nationalize various industries and predict that Holland will take a similar step in the near future. Higher prices being paid are termed justifiable and still higher prices are anticipated.

Prices shown below are ceilings set by the Office of Rubber Reserve, Reconstruction Finance Corporation:

	C	N-C
Plantations—		
Ribbed Smoked Sheets, 1X...	22½	40
Thick Pale Latex Crepe, 1X..	22½	40
Thin Pale Latex Crepe, 1X..	22½	40
Thick Brown Crepe, 1X.....	21⅜	38⅞
Thin Brown Crepe, 1X.....	21⅜	38⅞
Thick Remilled Blankets, #1..	21⅜	38⅞
Rolled Brown or Flat Bark..	18	35½
Smoked Blankets, #1.....	21⅜	38⅞
Claro Brand 1XRSS.....	22¼	40
Sole Crepe Trimmings.....	22	39½
Sole Crepe	22½	40
Wild—		
Uncut Fines, Crude.....	15	29
Cut Fines, Crude.....	15½	29¼
Cut Fines, Washed & Dried..	22½	40
Upriver Coarse, Crude.....	12¾	26⅛
Upriver Coarse, Washed & Dried	20¼	37¼
Caucho Ball, Crude	11⅝	24¾
Caucho Ball, Washed & Dried	19½	37
Guayule—		
Carload Lots	17½	31
Less than Carload Lots	18	31½
Balata—		
Surinam Sheet	42½	42½
Manaos Block	38¾	38¾
Colombian Block	38¾	38¾
Peruvian Prime	38¾	38¾
Chicken Wire	23¼	23¼
Latex—		
Normal, Tank Car Lots	26	43½
Creamed, Tank Car Lots	26¾	44¼
Centrifuged, Tank Car Lots..	27¼	45¼
Heat-Concentrated, Carload Drums	29½	47

C for Civilian Use; N-C for Non-Civilian Use.

Scrap Rubber

The scrap rubber market continues dull, with hardly any demand for tire parts, even from Akron, the principal market. Similar conditions are reported from other centers. The market for synthetic scrap is practically at a standstill, with reclaimers reported refusing to accept shipments of any kind. OPA has set dollar-and-cent ceiling prices on black carcass scrap rubber, the ceilings being $40.00 per short ton delivered in Los Angeles, and $50.00 delivered for all other consuming centers. Some demand for this type of scrap, long dormant, is now evident. Prices shown below are ceilings on typical grades of scrap:

(Prices to Consumers, Delivered Akron)

Mixed passenger tires	ton	$20.00
Beadless truck tires	ton	26.00
Mixed truck tires	ton	20.00
Beadless passenger tires	ton	26.00
No. 1 passenger peelings	ton	52.25
No. 1 truck peelings	ton	52.25
No. 2 passenger tubes	lb.	.07¼
Red passenger tubes	lb.	.07½
Black passenger tubes	lb.	.06¾
Mixed passenger tubes	lb.	.06½
No. 2 truck tubes	lb.	.07½
Red truck tubes	lb.	.07¼
Black truck tubes	lb.	.06½
Buffings	ton	35.00
Bicycle tires	ton	15.00
Air bags and water bags	ton	15.00
Boots and shoes	ton	33.00

Tire Fabrics

Demand for tire fabrics continues at the high levels which have been existent for many months. In fact, the continued uptrend in production figures for passenger, bus and truck tires has increased the demand proportionately. A slight improvement in the amount of tire cord and fabrics being produced has been recorded in recent weeks, particularly in rayon cord. As a further spur to such production, OPA has granted a 5% incentive premium to producers of tire cords (and other products). This increase, effective April 22, and covered by Amendment No. 21 to Supplementary Order 131, applies to manufacturers complying with the production requirements of the Civilian Production Administration. The same amendment modified the eligibility of Band A and B producers. Prices shown below are ceilings on typical grades of cotton tire cord:

Standard, Peeler, 12/4/2	lb.	.5276
Standard, Peeler, 14/4/2	lb.	.5381
Standard, Peeler, 16/4/3	lb.	.5486
Extra Staple, Peeler, 12/4/2	lb.	.6011
Extra Staple, Peeler, 14/4/2	lb.	.6116
Extra Staple, Peeler, 16/4/3	lb.	.6221

Note: Under OPA regulations mills in Band A add 7.98% to the above prices; mills in Band B add 4.55%.

Sheetings

48x40	36	in.	5.50	lb.	—	@ 8.272
40x40	36	in.	6.15	lb.	—	@ 7.398
40x36	36	in.	6.50	lb.	—	@ 7.000
48x48	40	in.	2.50	lb.	—	@17.200
48x48	40	in.	2.85	lb.	—	@15.087
56x60	40	in.	3.60	lb.	—	@12.638
48x44	40	in.	3.75	lb.	—	@11.733

Note: Prices shown above are ceiling prices set by order of the O.P.A.

Cotton

The price of middling uplands on the Cotton Exchange covered a 74 point range since our last report (April 16), high for the period being 28.52 on April 27 and low 27.78 on May 15. The average price of middling uplands for the month of April was 28.40, based on 24 trading days. Prices fluctuated irregularly from mid-April to May 1, in the face of industrial and political uncertainty. Predominating causes of the uncertainty were Washington news of public support of the OPA and the coal strike which threatened to close down a large number of mills, powered through the use of bituminous coal. A downward trend in prices started at the end of April due to the growing opposition of farm groups, consumer organizations and labor to the proposed radical changes in price control legislation. Also influencing bearish sentiment were prospects of a larger than anticipated cotton acreage for the current year, favorable weather conditions in the Cotton Belt, the delay in the settlement of the coal strike, and the possibility of a railway strike. The market is expected to remain unsteady for the next several weeks. Quotations for middling uplands on the Exchange follow:

	April 16	May 16		
	Close	High	Low	Close
July	27.68	27.32	27.10	27.30
October	27.64	27.53	27.30	27.50
December	....	27.60	27.40	27.59

Reclaimed Rubber

Despite rumors of shortages of carbon black, fabric, bead wire, and even of GR-S, no slackening of any kind in the demand for reclaimed rubber by tire manufacturers has occurred in recent weeks. Demand for reclaim from other branches of the rubber manufacturing industry also continues at the high level established in recent months. Production of reclaim is reported to be holding up well as the labor situation continues to show improvement, and some reclaimers even report substantial increases in their production output. Scrap rubber inventories on hand are satisfactory and few reclaimers are accepting synthetic scrap deliveries. This picture, however, is expected to change in the near future. Prices shown below are ceilings on typical grades of reclaim:

Shoe				
Unwashed	lb.	.07½	@	.07¾
Tube				
Black Tube	lb.	.11¾	@	.12
Red Tube	lb.	.12½	@	.12¾
Tires				
Black (acid process)	lb.	.08	@	.08¼
Black, selected tires	lb.	.07	@	.07¼
Truck, Heavy Gravity	lb.	.09	@	.09¼
Miscellaneous				
Mechanical blends	lb.	.05	@	.06
White	lb.	.13½	@	.13¾

Ducks

Enameling (single filling)	lb.	—	@	.44¼
Belting and Hose	lb.	—	@	.39
Single filling, A grade	lb.	—	@	.19¼
Double filling, A grade	lb.	—	@	.20¼

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RUBBER-FLO
MOLD LUBRICANT

An *entirely new* and *different product*

Keeps molds cleaner longer—Gives greater lustre to finished parts. Send for a Free sample and compare it in your own way. Many large companies are obtaining phenomenal results, and are using it *exclusively.*

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Softens Rubber—cured and uncured. Salvage metal from rejects. Cleans screens, valves, molds, and has many other uses.

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Pigments and Chemicals for the RUBBER INDUSTRY.

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We PROCESS LINERS of All Types ★

We also manufacture Mold Lubricants for use with synthetic as well as natural rubber.

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MILDEW-PROOF • FLAME-PROOF
WATER-PROOF

OUR ENGINEERS WILL GLADLY CALL AT YOUR CONVENIENCE

CURRENT MARKET PRICES

Of Rubber Chemicals and Compounding Ingredients

MAY 16, 1946

Prices are, in general, f.o.b. works.
Range of prices indicates grade or quantity variations.
All trade or brand names are set off in quotation marks.
Abbreviations: bbls., barrels; c.l., carlot; l.c.l., less than carlot; dlvd., delivered; t.c., tank cars; min., minimum; dms., drums; cyl., cylinder.
[a] East of Mississippi.

—The arrangement of this section follows closely the Chemical Section of the 1945 RUBBER RED BOOK to which readers are referred to determine the classification of any material or brand name.
—Although suppliers of every material were contacted for price information, only those materials are listed for which quotations have been furnished us. The quotations are not guaranteed and prospective purchasers should contact suppliers for confirmation before placing orders. Suppliers are requested to send us regularly current prices on all of their materials used in the rubber industry.
—All requests for information or listings should be sent to Market Editor, RUBBER AGE, 250 West 57th St., New York 19, N. Y.

ACCELERATORS

"A-1"	lb.	.28	-	.33
"A-10"	lb.	.36	-	.42
"A-19"	lb.	.52	-	.58
"A-77"	lb.	.42	-	.55
"A-100"	lb.	.42	-	.55
"Accelerator No. 8" (dlvd.)	lb.	.63	-	.65
"Accelerator No. 49"	lb.	.40	-	.42
"Accelerator No. 89" (dlvd.)	lb.	——	-	1.20
"Accelerator No. 122" (dlvd.)	lb.	——	-	1.30
"Accelerator No. 552" (dlvd.)	lb.	——	-	1.63
"Accelerator No. 808" (dlvd.)	lb.	.59	-	.61
"Accelerator No. 833" (dlvd.)	lb.	1.13	-	1.15
"Acrin"	lb.	——	-	.65
"Advan"	lb.	.52	-	.55
"Altax"	lb.	.39	-	.41
"Arazate"	lb.	——	-	1.53
"Beutene"	lb.	.59	-	.61
"B-J-F"	lb.	.34	-	.36
"Bunac K-17"	lb.	.17	-	.19
"Butasan"	lb.	——	-	1.10
"Butazate"	lb.	——	-	1.10
"Butyl Eight"	lb.	.97	-	.99
"Captax"	lb.	.34	-	.36
"C-P-B"	lb.	——	-	1.95
"Cumate"	lb.	——	-	1.60
"Cuprax"	lb.	.60	-	.62
"Dibenzo G-M-F"	lb.	——	-	1.50
"Diesterex-N"	lb.	.50	-	.52
Diorthotolylguanidine (dlvd.)	lb.	.44	-	.46
Diphenylguanidine (dlvd.)	lb.	.35	-	.41
"El-Sixty"	lb.	.36	-	.43
"Ethasan"	lb.	——	-	1.10
"Ethazate"	lb.	——	-	1.10
"Ethyl Tuex"	lb.	——	-	1.25
Formaniline (dlvd.)	lb.	.36	-	.37
"G-M-F"	lb.	——	-	1.95
"Goodrite Erie"	lb.	.60	-	.62
"Guantal"	lb.	.39	-	.48
"Hepteen"	lb.	.34	-	.35
"Base"	lb.	1.25	-	1.30
"Ledate"	lb.	——	-	1.20
Mercaptobenzothiazole	lb.	.34	-	.36
Mercaptobenzothiazyl Disulfide	lb.	.39	-	.41
"Methasan"	lb.	——	-	1.20
"Methazate"	lb.	——	-	1.20
"Monex"	lb.	——	-	1.25
"Mono-Thiurad"	lb.	——	-	1.25
"Morfex 33"	lb.	.60	-	.62
"2-MT" (dlvd.)	lb.	.58	-	.60
"Namate"	lb.	——	-	1.00
"Novac"	lb.	——	-	1.40
"A-13"	lb.	.65	-	.67
"O-X-A-F"	lb.	.38	-	.40
"Pentex"	lb.	.74	-	.77
"Flour"	lb.	.12¾	-	.12¾
"Phenex" (tons)	lb.	——	-	.49
"Pipazate"	lb.	——	-	1.53
"Pip-Pip"	lb.	——	-	1.63
"R-2 Crystals"	lb.	——	-	1.55
"Rotax"	lb.	.44	-	.46
"Safex"	lb.	1.15	-	1.20
"Santocure"	lb.	.60	-	.67
"Selazate"	lb.	——	-	1.60
"Selenac" (Ethyl, Methyl)	lb.	——	-	1.60
"Setsit-5"	lb.	.70	-	1.00
"SPDX-G" (tons)	lb.	——	-	.53
"Tellurac, Ethyl"	lb.	——	-	1.60
"Tepidone" (dlvd.)	lb.	——	-	.63
"Tetrone" (dlvd.)	lb.	——	-	1.25
"A" (dlvd.)	lb.	——	-	1.85
Thiocarbanilide (dlvd.)	lb.	——	-	.28
"Thiofide"	lb.	.39	-	.46
"Thionex" (dlvd.)	lb.	——	-	1.25
"Thiotax"	lb.	.34	-	.41
"Thiurad"	lb.	——	-	1.25
"Thiuram E" (and "M") (dlvd.)	lb.	——	-	1.25
"Trimene"	lb.	.54	-	.56
"Base"	lb.	1.03	-	1.06
Triphenylguanidine (dlvd.)	lb.	——	-	.45
"Tuads" (Ethyl, Methyl)	lb.	——	-	1.25
"Tuex"	lb.	——	-	1.25
"Ulto" (tons)	lb.	——	-	.99
"L"	lb.	——	-	1.04
"Ureka"	lb.	.50	-	.57
"Blend B"	lb.	.50	-	.57
"C"	lb.	.48	-	.55
"Vulcanex" (dlvd.)	lb.	.42	-	.43
"Z-B-X"	lb.	——	-	2.45
"Zenite" (dlvd.)	lb.	.37	-	.39
"A" (dlvd.)	lb.	.42	-	.44
"B" (dlvd.)	lb.	.39	-	.41
"Zimate" ("Butyl," "Ethyl")	lb.	——	-	1.10
"Zimate, Methyl"	lb.	——	-	1.20

ACTIVATORS

Blue Lead, Sublimed (dlvd.)	lb.	.07¼	-	.07½
Fish Oil, Hydrogenated, Fatty Acid				
"Hyfac S-52"	lb.	.14⅞	-	.15⅜[a]
"Stearex Beads" (dlvd.)	lb.	.14⅞	-	.15⅜
Lime, Hydrated				
"Arrowhead"	ton	16.00	-	19.50
"Sierra"	ton	16.00	-	19.50
Litharge				
"Eagle" (dlvd.)	lb.	.08	-	.09
"FBS" (dlvd.)	lb.	.08	-	.09¼
Magnesium Oxide, Light				
"Baker's" (Neoprene Grade)	lb.	——	-	.25
"K & M"	lb.	——	-	.25
"Michigan No. 30"	lb.	——	-	.22½
"Michigan No. 40"	lb.	——	-	.25
"Witco Extra Light"	lb.	.25	-	.27
Magnesium Oxide, Heavy				
"Michigan No. 15"	lb.	.05	-	.05½
"Permanente"	lb.	.05	-	.06½
Oleic Acid (dlvd.)	lb.	.12½	-	.14¼
"Elaine O-18"	lb.	.12½	-	.13¼[a]
Palm Oil Fatty Acid (c.l.)	lb.	——	-	.11
Potassium Oleate (drums)	lb.	——	-	.29½
Red Lead				
"Eagle" (dlvd.)	lb.	.09	-	.10
"No. 2 RM" (dlvd.)	lb.	.09½	-	.11¼
Sodium Laurate (drums)	lb.	——	-	.19
Sodium Oleate—Powder (drums)	lb.	——	-	.35
Paste (drums)	lb.	——	-	.20
Sodium Stearate—Powder (drums)	lb.	——	-	.35
USP Grade (drums)	lb.	——	-	.37
Stearic Acid, Single Pressed				
"S-24"	lb.	.15¼	-	.15⅞[a]
"Stearex B" (dlvd.)	lb.	.15⅜	-	.16⅜
Stearic Acid, Double Pressed				
"Alba" (dlvd.)	lb.	.19⅝	-	.20⅝
"S-2-A" (dlvd.)	lb.	.16⅞	-	.17⅜
"S-2-B" (dlvd.)	lb.	.16⅜	-	.17⅜
White Lead Carbonate (dlvd.)	lb.	.08¼	-	.08½
Zinc Laurate (c.l.)	lb.	——	-	.29
"Laurex"	lb.	.14¾	-	.15¼
Zinc Stearate	lb.	.29	-	.31

Unclassified Activators

"Activex"	lb.	.20	-	.22
"Actoflux 1-S"	lb.	.52	-	.62
"3-S"	lb.	.58	-	.64
"Aero Ac 50"	lb.	.46	-	.52
"165"	lb.	.43	-	.45
"Barak" (dlvd.)	lb.	——	-	.50
"D-B-A"	lb.	——	-	1.95
"Delac J"	lb.	.50	-	.55
"P"	lb.	.39	-	.43
"Dibutylamine No. 117" (l.c.l., dms.)	lb.	——	-	.69
"Hydrex" (c.l., dlvd.)	lb.	——	-	.14⅞
"Hydrofol Acid No. 51" (dlvd.)	lb.	.1487	-	.1587
"Palmalene" (drums)	lb.	——	-	.13
"Polyac" (dlvd.)	lb.	——	-	1.25
"Ridacto" (drums)	lb.	——	-	.20
"SL-20" (min. 10 drums)	lb.	——	-	.1089
"Snodotte" (dlvd.)	lb.	.1537	-	.1637
"SOAC" (min. 10 dms.)	cwt.	——	-	8.00
"Stearite"	cwt.	14.87	-	15.87
"Triamylamine No. 180" (l.c.l., drums)	lb.	——	-	1.01

ANTI-COAGULANTS

Anhydrous Ammonia (l.c.l.)	lb.	.02½	-	.02¾
"National" (cyl.)	lb.	.13	-	.17
"M.B.M." (l.c.l.)	lb.	——	-	.35

ANTI-FOAMING AGENTS

"Aero Anti Foam H"	lb.	——	-	.12
"Regular"	lb.	——	-	.08½

ANTI-OXIDANTS

"Agerite Alba"	lb.	1.95	-	2.05
"Gel"	lb.	.52	-	.54
"Hipar"	lb.	.61	-	.63
"HP"	lb.	.53	-	.55
"Powder"	lb.	.40	-	.42
"Resin"	lb.	.43	-	.45
"Resin D"	lb.	.40	-	.42
"Stalite"	lb.	.40	-	.42
"White"	lb.	1.23	-	1.33
"Akroflex C" (dlvd.)	lb.	.53	-	.55
"Albasan"	lb.	.69	-	.71
"Aminox"	lb.	.40	-	.42
"Antox" (dlvd.)	lb.	.54	-	.56
"Aranox"	lb.	——	-	1.95
Benzoquinone	lb.	1.50	-	1.75
"Betanox"	lb.	.43	-	.45
"B-L-E"	lb.	.40	-	.42
"Powder"	lb.	.61	-	.63
"B-X-A"	lb.	.43	-	.45
Carvacrol	lb.	——	-	.80
Chlorcarvacrol	lb.	——	-	2.00
"Flectol H"	lb.	.40	-	.47
"Flexamine"	lb.	.53	-	.55
Gallic Acid, Tech.	lb.	1.10	-	1.15
USP or NF	lb.	1.27	-	1.30
Hydroquinone	lb.	.90	-	.94
Monomethylparaminophenol sulfate	lb.	2.40	-	2.90
"Neozone Standard" (dlvd.)	lb.	.61	-	.63
"A" (dlvd.)	lb.	.40	-	.42
"C" (dlvd.)	lb.	.43	-	.45
"D" (dlvd.)	lb.	.40	-	.42
"D Distilled" (dlvd.)	lb.	.45	-	.47
"Oxynone"	lb.	.77	-	.90
"Parazone" (dlvd.)	lb.	——	-	.68
"Perflectol"	lb.	.53	-	.60
"Permalux" (dlvd.)	lb.	1.18	-	1.20
Pyrogallic Acid, Resublimed	lb.	2.60	-	2.65
USP Crystals	lb.	2.10	-	2.15
Resorcin, Tech. (dlvd.)	lb.	——	-	.64
"Santoflex B"	lb.	.40	-	.47
"BX"	lb.	.54	-	.61
"Santovar O"	lb.	1.15	-	1.40
"Santowhite"	lb.	1.23	-	1.38
"S.C.R." (tons)	lb.	——	-	.32
"Solux" (dlvd.)	lb.	1.28	-	1.30
"Stabilite" (tons)	lb.	——	-	.48
"Alba" (tons)	lb.	——	-	.69
"L" (tons)	lb.	——	-	.48
Tannic Acid, Tech.	lb.	.75	-	.79
"Thermoflex" (dlvd.)	lb.	1.18	-	1.20
"A" (dlvd.)	lb.	.61	-	.63
"C" (dlvd.)	lb.	.54	-	.56
Thymol	lb.	——	-	2.50
"V-G-B"	lb.	.43	-	.45

ANTI-SCORCHING AGENTS

Salicylic Acid, Tech.	lb.	——	-	.33
"Vultrol"	lb.	.50	-	.55

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Crude Rubber — *Liquid Latex*
Crown Rubber Clay — *Carbon Black*
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RAYCO *Flock*
FOR NON-MARKING SOLE COMPOUNDS

Rayco Flock has great potentialities for minimizing marking in sole compounds of either crude, synthetic or reclaim. In addition it enhances tear-resistance and wear-resistance. To assure you maximum results, we "Research-fit" our flocks to your needs, giving you the exact cut and type needed for your individual compounds.

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100 TREMONT ST., CENTRAL FALLS, RHODE ISLAND
Developers and Producers of Cotton Fillers for Plastics

ANTISEPTICS AND GERMICIDES

Formaldehyde (barrels)	lb.	——	.057
"G-4"	lb.	.95	2.50
"G-11"	lb.	3.50	5.50
Ortho Cresol	lb.	.17½	.18
"Soligen Drier"—Copper 8% (drums)	lb.	——	.17
"Zinc 8%" (dms.)	lb.	——	.15¾

AROMATICS (REODORANTS)

"Arolene 1980" (c.l.)	lb.	——	.10
"2286"	lb.	——	.25
"2553" (c.l., dms.)	lb.	——	.13
"Bouquet 149"	lb.	——	3.00
Coumarin	lb.	2.75	2.90
"Curodex 19"	lb.	——	4.75
"188"	lb.	——	5.75
"198"	lb.	——	6.75
"Deodorant 65"	lb.	——	1.00
"Deodorant L-37" (25 lbs.)	lb.	——	2.15
"L-44" (25 lbs.)	lb.	——	2.65
"Latex Perfume 5"	lb.	——	3.25
"6"	lb.	——	7.50
"9"	lb.	——	.65
"Neutroleum Delta"	lb.	——	2.40
"Gamma"	lb.	——	3.40
"Paradors A"	lb.	1.60	2.15
"B"	lb.	.65	1.00
"C"	lb.	2.75	3.25
"D"	lb.	1.50	2.00
"E"	lb.	.25	.55
"Rodo No. 0"	lb.	4.00	4.50
"No. 10"	lb.	5.00	5.50
"Rubber Perfume 7"	lb.	——	9.15
"12"	lb.	——	1.90
"Russian Leather 7"	lb.	——	4.10
Vanillin	lb.	2.35	2.40

BLOWING AGENTS

Ammonium Bicarbonate	lb.	.0564	.0651
"Blowing Agent No. 15"	lb.	——	.35
Sodium Bicarbonate, Tech. (c.l., bags)	cwt.	——	1.70
"Sponge Paste"	lb.	——	.20
"Unicel" (dlvd.)	lb.	——	.50
Urea	ton	68.00	85.00

BONDING AGENTS

"Bonding Resin 4162"	lb.	——	1.50
"Durez 12987"	lb.	.48	.53
"Reanite"	gal.	6.75	7.25
"Rex Compound 482"	gal.	——	1.05
"Ty-Ply Q" (and "S")	gal.	6.75	8.75

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	——	5.83
Glacial—99½% (bbls.)	cwt.	——	9.40
Calcium Nitrate, Tech., Crystals	lb.	.12½	.15
Zinc Nitrate, Tech.	lb.	.19½	.22

COLORING AGENTS

Black

Carbon Black—See *Reinforcing Agents*			
"Lampblack No. 10"	lb.	.06	.09
"Mapico Black Iron Oxide" (50 lb. bags)	lb.	.081	.0835

Blue

"Blue GD, Dispersed" (dlvd.)	lb.	——	3.95
"Paste" (dlvd.)	lb.	——	1.64
"Blue N" (dlvd.)	lb.	——	.90
"Blue YD, Dispersed" (dlvd.)	lb.	——	1.90
"Monastral Fast Blue CP" (dlvd.)	lb.	——	3.50
"PCD, Dispersed" (dlvd.)	lb.	——	1.95
"Ramapo Blue"	lb.	3.08	3.13
Ultramarine	lb.	.12	.30

Brown

Brown Iron Oxide	lb.	——	.10
"Mapico Brown" (50 lb. bags)	lb.	——	.1135

Green

Green Chromium Oxide, Pure	cwt.	——	26.00
Green Chromium Oxide, Pure, Hydrated	cwt.	70.00	85.00
"Green FD, Dispersed" (dlvd.)	lb.	——	1.35
"Monastral Fast Green GSD, Dispersed" (dlvd.)	lb.	——	2.85
"GSD Paste" (dlvd.)	lb.	——	1.10
"Pigment Green B"	lb.	1.35	1.40
"Ramapo Green"	lb.	3.60	3.65

Orange

"Molybdate Orange"	lb.	.31	.36
"Orange F" (dlvd.)	lb.	——	3.05
"FD, Dispersed" (dlvd.)	lb.	——	2.35
"OT" (dlvd.)	lb.	——	2.75

Purple

Purple Oxide	lb.	——	.08

Red

Barium Lithol Red	lb.	.60	.65
Calcium Lithol Red	lb.	.60	.65
"Graphic Red"	lb.	——	.60
Indian Red, Pure	cwt.	9.10	10.25
"Mapico Red 297" (50 lb. bags)	lb.	.0885	.096
"Oximony" Iron Oxide	lb.	——	.09
Red Iron Oxide, Light	cwt.	9.60	10.75
"Red PB" (dlvd.)	lb.	——	1.65
"PBD, Dispersed" (dlvd.)	lb.	——	1.50
"2B" (dlvd.)	lb.	——	1.65
"2BD, Dispersed" (dlvd.)	lb.	——	1.50
"Rubanox Red CP-762"	lb.	——	1.10
"Rubber Red CP-339"	lb.	——	.90
"Solfast Red CP-663"	lb.	——	1.55
"CP-787"	lb.	——	1.10
"Watchung Red"	lb.	1.65	1.70

White—Lithopone

"Albalith"	lb.	.04¼	.04¾
"Cryptone No. 19"	lb.	.056	.061
"CB No. 21"	lb.	.056	.061
"Eagle" (dlvd.)	lb.	.04¼	.04½
"Permalith"	lb.	.04¼	.04½
"Ponolith"	lb.	.04¼	.04½
"Ti-Tone"	lb.	.056	.0585

White—Titanium Pigments

"Raycal"	lb.	.05½	.05¾
"Rayox"	lb.	.14½	.16¼
"Titanox A"—all grades (dlvd.)	lb.	.14½	.15¼
"B-30" (dlvd.)	lb.	.05¾	.06
"C" (dlvd.)	lb.	.05½	.05¾
"RA"—all grades (dlvd.)	lb.	.15½	.16¼
"RC-HT" (dlvd.)	lb.	.05½	.05¾
"Ti-Bar"	lb.	.05¾	.06
"Ti-Cal"	lb.	.05½	.05¾
"Ti-Pure"	lb.	.14½	.17¼

White—Zinc Oxide (American Process)

"AZO-ZZZ 11" (and "22, 33, 44, 55") (dlvd.)	lb.	.07¼	.08
"Eagle" (dlvd.)	lb.	.07¼	.07½
"Horse Head Special"	lb.	.07¼	.08
"XX Red"	lb.	.07¼	.08
"Jozite"	lb.	.06	.06¼
"St. Joe Black Label" (dlvd.)	lb.	.07¼	.07½
"Green Label" (dlvd.)	lb.	.07¼	.07½
"Red Label" (dlvd.)	lb.	.07¼	.07½

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	——	.12

White—Zinc Oxide (French Process)

"AZO-ZZZ 66"	lb.	.09½	.10¼
"Kadox 72"	lb.	.07¼	.08
"Black Label"	lb.	.07¼	.08
"Red Label"	lb.	.07¼	.08
"Florence Green Seal"	lb.	.09	.09¾
"Red Seal"	lb.	.08½	.09¾
"White Seal"	lb.	.09½	.10¼
"U.S.P. 12"	lb.	.10½	.11¼

White—Zinc Sulfide

"Cryptone ZS-800"	lb.	.08¼	.08¾

Yellow

Chrome Yellow	lb.	.16	.21
"Chrome Yellow 12310"	lb.	——	.16
"Ferrox"	cwt.	——	7.38
"Mapico Yellow" (50 lb. bags)	lb.	.0685	.071
"Oximony" Iron Oxide	lb.	——	.06¾
"Yellow G" (dlvd.)	lb.	——	1.75
"GD, Dispersed" (dlvd.)	lb.	——	1.50
"HN" (dlvd.)	lb.	——	1.37
Yellow Iron Oxide, Pure	cwt.	7.10	8.25

DISPERSING AGENTS

"Agchem SA-19"	lb.	——	.30
"SA-20"	lb.	——	.70
"Aquasol-AR 90%"	lb.	——	.14½
"Darvan No. 1"	lb.	.15½	.35
"No. 2"	lb.	.19	.30
"Dispersaid"	lb.	1.25	1.35
"Dilex"	lb.	——	.32
"Halloid"	lb.	.03¾	.09½
"HornKem No. 1"	gal.	——	1.60
"No. 3G"	gal.	——	1.75
"No. 12"	lb.	——	.17
"Marasperse CB"	lb.	.10	.20
"Penetrol"	lb.	——	.20
"Plastak"	lb.	.089	.095
"Ramol PW"	lb.	.18	.19
"Rubbex"	lb.	.139	.14¾
Triethanolamine (drums) (dlvd.)	lb.	.19	.21
"Zinsper"	lb.	——	.15

EXTENDERS

"Advagum 1098"	lb.	——	.42
"D-92" (and "D-93") (drums)	lb.	——	.10
"Extender 600"	lb.	——	.13½
"HC-5"	lb.	.08½	.12
"HC-22"	lb.	.12	.15
"Multi-Plast MV 60 Emul."	gal.	.32	.37
"Naftolen MV 60 Emul."	gal.	.60	.65
"HV 60 Emul."	gal.	.75	.80
"Synprolac"	lb.	——	.19
"Synprowax"	lb.	.16	.19

FILLERS

Abrasives			
"Carbonite"	lb.	.15	.95
"Lionite"	lb.	.09¾	.90
Aluminum Hydrate	lb.	——	.14½
Barium Carbonate (l.c.l.)	ton	77.00	85.00
Barytes			
No. 1 Floated, White	ton	25.55	40.00
No. 2 Floated, Unbleached	ton	——	25.55
"No. 22 Barytes" (c.l.)	ton	——	18.37
"Foam A"	ton	——	25.35
Off-Color, Domestic (l.c.l.)	ton	29.00	32.00
Bentonite (c.l.)	ton	——	9.50
Blanc Fixe	ton	60.00	120.00
Calcium Carbonate			
"Atomite" (c.l.)	ton	——	27.50
"B.I. White No. 1" (c.l.)	ton	——	6.50
"Calcene T"	ton	37.50	47.50
"Camelwhite" (c.l.)	ton	27.50	30.00
"Kalite"	ton	26.00	52.00
"Kalvan"	ton	100.00	126.00
"Lesamite" (c.l.)	ton	——	27.50
"Lim-Cal" (c.l.)	ton	——	12.50
"Millical" (bags)	ton	18.00	30.00
"Suprex White"	ton	——	32.50
"Suspenso" (bags)	ton	17.00	29.00
"Swansdown" (bags)	ton	15.00	27.00
Calcium Silicate			
"Silene EF"	ton	110.00	120.00
Calcium Sulfate, Hydrous			
"Crysta-Cal" (c.l.)	ton	——	12.50
Chalk Whiting (l.c.l.)	lb.	.15	.17½
Clay			
"Alsite" (c.l.)	ton	——	11.00
"Aluminum Flake"	ton	15.00	30.00
"A.S.P. No. 1" (c.l.)	ton	——	30.00
"No. 11" (c.l.)	ton	——	40.00
"Buca" (c.l.)	ton	——	40.00
"Catalpo" (c.l.)	ton	——	30.00
"C.S.D." (c.l.)	ton	——	10.00
"Crown" (c.l.)	ton	——	11.00
"Dixie"	ton	11.00	23.50
"Hydratex R"	ton	20.00	32.50
"Kaolloid Clay" (c.l.)	ton	——	9.00
"Langford"	ton	——	8.50
"Markham"	ton	11.00	23.50
"McNamee"	ton	10.00	22.50
"Oldham"	ton	11.00	23.50
"Paragon"	ton	10.00	22.50
"Penna Clay" (c.l.)	ton	——	12.00
"Pigment 33" (c.l.)	ton	——	30.00
"Recco Clay" (c.l.)	ton	——	11.00
"Suprex"	ton	11.00	23.50
"Upton"	ton	19.50	21.00
"Whitetex" (c.l.)	ton	——	50.00
"Witco No. 1" (c.l.)	ton	——	11.00
"No. 2" (c.l.)	ton	——	10.00
Diatomaceous Earth	ton	30.00	50.00
"Kaylorite" (c.l.)	ton	——	30.00
Dolomite (c.l.)	ton	——	12.50
Flock			
Cotton	lb.	.08½	.20
"Filfloc F 40-9000"	lb.	——	.10½
"Filfloc F 6000"	lb.	——	.16
Rayon, bleached or dyed	lb.	.85	1.50
Rayon, grey	lb.	.10	.12
"Solka-Floc" (l.c.l.)	lb.	.06	.12
Wool, bleached or dyed	lb.	.70	1.00
Glue, Bone (dlvd.)	lb.	.16½	.18½
Ground Glass (l.c.l.)	lb.	.04	.06
Leather, Shredded	lb.	.05	.17
Lignin	lb.	.03	.06
Limestone, Pulverized	ton	3.25	10.00
"Micro Velva"	ton	30.00	32.00
"Velvet Filler, Regular"	ton	16.00	18.00
"York White" (c.l.)	ton	——	8.00
Magnesium Carbonate	lb.	.06¼	.07¼
"Clearcarb"	lb.	.09	.09½
"K & M"	lb.	.06¼	.07¼
Magnesium Silicate	ton	18.00	35.00
"Airex"	ton	22.50	23.50
"Asbestol"	ton	17.00	25.00
"L.S. Silver"	ton	22.50	23.50
"Sierra White"	ton	19.50	21.00
Mica	lb.	.03	.07
"Micro-Mica"	lb.	.06½	.07
"Mineralite" (c.l.)	ton	30.00	40.00
"Silversheen"	lb.	.05¼	.05¾
"Triple A Mica" (c.l.)	ton	——	25.00
"Wet Ground Mica No. 160"	lb.	.05¼	.06¾
Pumice	lb.	.03	.05
Pyrophyllite			
"Pyrax"	ton	10.00	25.00
Silica	ton	16.00	27.00
Slate, Powdered (l.c.l.)	ton	15.00	20.00
Talc, Domestic	ton	9.00	20.00
Whiting, Commercial	ton	8.00	20.00
"Cameline" (c.l.)	ton	8.50	10.00
"C-C-O White"	ton	——	14.00
"Keystone" (c.l.)	ton	——	14.00
"Recco Whiting"	ton	——	25.00
"Snowflake" (c.l.)	ton	——	16.00
"Veroc" (c.l.)	ton	——	6.50
Wood Flour	ton	20.00	60.00

FINISHING MATERIALS, SURFACE

Shellac, Orange Gum	lb.	.35½	.48½
"Vanwax 40"	gal.	——	1.30

FLAME RETARDANTS

Chlorinated Paraffin	lb.	.10	.25
"Zinc Borate 3167"	lb.	.12	.16¾
"Zyrox"	lb.	.35	.45

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—Orvus is effective in hardest water.
—Orvus forms no insoluble materials which might be deposited as a film on mold or rubber.

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LUBRICANTS, MOLD

"Aquadag"	lb.	3.15	- 3.45
"Aquarex L Paste" (dlvd.)	lb.	——	- .85
"MDL Paste" (dlvd.)	lb.	——	- .25
Borax, Granular (l.c.l.)	ton	56.00	- 61.00
"Colite Concentrate" (dms.)	gal.	——	- .90
"Dipex"	lb.	.11	- .13
"M"	lb.	.13	- .15
"Dri-Lube"	lb.	——	- .18
"Glycerized Lubricant"	gal.	——	- 1.50
"Glydag"	lb.	1.30	- 2.00
"G.T.M.C. Solution"	lb.	1.05	- 1.35
"Kokobace"	lb.	——	- .12
"Lubrex"	lb.	.25	- .30
"Migralube"	lb.	——	- .30
"Moldex"	lb.	——	- .12½
"Mold-Slick"	lb.	.202	- .215
"Prodag"	lb.	.25	- .38
"Redotex Flakes" (dlvd.)	lb.	.13⅞	- .15⅛
"Powder" (dlvd.)	lb.	.14¼	- .15½
"Rubber-Flo"	gal.	——	- 1.00
"Rubber-Glo"	gal.	——	- .94
"Rusco Mold Paste"	lb.	.12	- .18
Sericite (l.c.l.)	ton	65.00	- 75.00
Werkrite Flakes" (dlvd.)	lb.	.11¼	- .13
"Powder" (dlvd.)	lb.	.12⅛	- .13⅜

LUBRICANTS, RUBBER

Lithium Stearate	lb.	——	- .60
Propylene Stearate (drums)	lb.	——	- .40
"Rubberol"	lb.	——	- .18½

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.30	- .31
Calcium Stearate	lb.	.25	- .27
"Orel"	gal.	1.85	- 2.00
Polyethylene Glycol	lb.	.25	- .26
"Rexanol A"	lb.	——	- .11
"Separex A"	lb.	——	- .15

MOLD CLEANERS

"Metso 99"	cwt.	3.05	- 4.45
"Granular"	cwt.	2.50	- 3.55
"Rubber-Sol"	gal.	——	- 1.89
Sodium Silicate	cwt.	.80	- 1.40

PEPTIZING AGENTS

Carbothermic Magnesia	lb.	——	- .13½
"Peptizer P-12"	lb.	.07½	- .083

PLASTICIZERS & SOFTENERS

"AA" (drums)	lb.	——	- .15¾
"Acto 500"	lb.	——	- .09
"Amalgamator Z-4"	lb.	——	- .30
"American" Pine Tar	gal.	.25	- .38½
"Bardex" (l.c.l.)	lb.	——	- .04½
"Bardol"	lb.	.02½	- .02¾
"B" (l.c.l.)	lb.	——	- .05¾
"Bayol D"	gal.	.25	- .26
"F"	gal.	.37	- .40
Beeswax, Refined & Bleached	lb.	.56	- .64
Yellow Refined	lb.	.54	- .55
"Bondogen"	lb.	.55	- .85
"B.R.C. No. 20"	lb.	.0105	- .0115
"B.R.H. 2"	lb.	.02	- .021
"B.R.T. 3"	lb.	.0175	- .0185
"4"	lb.	.019	- .02
"7"	lb.	.02	- .021
"B.R.V."	lb.	.035	- .0375
"Bunarex 10"	lb.	——	- .05½
"100"	lb.	——	- .05¼
"Bunatak M"	lb.	——	- .20
"O"	lb.	——	- .18
"R"	lb.	——	- .14
"U"	lb.	——	- .15
"No. 21"	lb.	——	- .08
"No. 1080"	lb.	——	- .09½
Burgundy Pitch	lb.	——	- .10
"Butac"	lb.	.09½	- .13½
Butyl Benzyl Sebacate	lb.	.75	- .77½
Butyl Palmitate	lb.	——	- .26⅜
Butyl Roleate	lb.	.16	- .18
"BWH-1"	lb.	——	- .10
"Campol" (t.c.)	ton	——	- 42.00
Candelilla Wax, Prime	lb.	.72	- .73
"Carbonex"	lb.	.0295	- .03¼
"S"	lb.	.03	- .03½
"S Plastic"	lb.	.0285	- .0335
"Carbowax 4000" (drums)	lb.	.29	- .30
"Cardolite 615"	lb.	.32	- .35
"816"	lb.	.20	- .23
"5858"	lb.	.42	- .46
Carnauba Wax, Crude	lb.	1.30	- 1.75
Refined	lb.	1.45	- 1.46
Substitute	lb.	——	- .45
Ceresin Wax	lb.	.12	- .18
"Contogum"	lb.	.06¾	- .09¼
"Cumar Resins"	lb.	.05¾	- .11¾
"D.B.M."	lb.	——	- .30
Degras, Common	lb.	.10	- .14
Diamylphenol (l.c.l., drums)	lb.	——	- .21
Dibenzyl Ether (drums)	lb.	——	- .40
Dibenzyl Sebacate	lb.	.66	- .70½
Dibutyl Phthalate	lb.	.16	- .24
Dibutyl Sebacate—Tech.	lb.	.49	- .51½
C.P.	lb.	.51	- .53½
Dicapryl Phthalate	lb.	.24½	- .27
Di-carbitol Phthalate (l.c.l., drums)	lb.	——	- .35
"Dielex"	lb.	.05½	- .06
Diethyl Phthalate (t.c.)	lb.	——	- .20½
Dihexyl Sebacate	lb.	.46	- .48½
Dimethyl Phthalate	lb.	.19	- .20½
Dimethyl Sebacate	lb.	.65	- .67½
Dioctyl Phthalate (drums, dlvd.)	lb.	.35½	- .36
Dioctyl Sebacate	lb.	.53	- .54½
"Dipolymer Oil"	gal.	.33	- .38
"Dispersing Oil No. 10" (l.c.l.)	lb.	——	- .04
"Dutrex A" (and "6," "20," "25")	lb.	.02½	- .03½
"15"	gal.	.17	- .18
"Dyal 89"	lb.	——	- .45
"Econo-Plast" (drums)	lb.	.03¼	- .03¾
"ELA" (dlvd.)	lb.	——	- .80
"Estac"	lb.	——	- .14½
"Ethox" (l.c.l., drums)	lb.	——	- .3065
"Flexol DOP" (drums, dlvd.)	lb.	.35½	- .36
"Flexol 3GH"	lb.	——	- .56
"3GO"	lb.	.52½	- .53½
"4GO"	lb.	.39	- .40
"H-70"	lb.	.56¾	- .64½
"Hercolyn" (dlvd.)	lb.	.12	- .16
"Herco-Plas"	lb.	——	- .03
"Herco-Wax"	lb.	——	- .03½
"HT-300"	lb.	.45¾	- .53
"Indonex 633½" ("634½, 638½, 639½")	gal.	.14	- .16
"JMH"	lb.	——	- .65
"Kapsol" (l.c.l., drums)	lb.	——	- .29
"Kromsol" (drums)	lb.	.297	- .3065
"Kronitex" (drums)	lb.	.25½	- .26½[a]
"KP" (l.c.l., drums)	lb.	.29	- .45
Lanolin, Tech., Anhydrous	lb.	.28	- .30
Lead Oleate	lb.	.16½	- .19¾
2-Mercaptoethanol (drums)	lb.	——	- .75
"Methox" (l.c.l., drums)	lb.	——	- .3065
Methyl Oleate	lb.	——	- .20
Methyl Stearate	lb.	——	- .34
"Montan Substitute No. 506"	lb.	.314	- .324
"Monten Wax" (c.l.)	lb.	——	- .12
"Monty Wax"	lb.	——	- .33
"Multi-Plast" (drums)	lb.	.04¼	- .04¾
"Naftolen HV" (and "R-100") (drums)	lb.	.11	- .12
"LV" and "MV" (drums)	lb.	.05¼	- .05¾
"Nerium"	lb.	——	- .09
"Nevillac Resins" (drums)	lb.	.17	- .50
"Neville Resins" (drums)	lb.	.08½	- .14¾
"Nevindene Resins" (drums)	lb.	.10½	- .13½
"Nevinol" (drums)	lb.	——	- .13
"Nevoll"	lb.	.02	- .02½
"Nevtex 10" (drums)	lb.	——	- .08
"90" (drums)	lb.	——	- .20
"Nuba 1" (and "2") (drums)	lb.	——	- .029
"3X" (drums)	lb.	——	- .04¼
"15 (and 30) Oil" (drums)	lb.	——	- .17¼
"781 Oil" (drums)	lb.	——	- .22
"No. 480 Oil Proof Resin"	lb.	.14	- .14½
"Opalwax"	lb.	.22	- .23
Ortho-Nitrobiphenyl	lb.	.06	- .11
"Ozokerite Wax No. 64 White"	lb.	.31	- .32
"Yellow"	lb.	.25	- .26
"P-1" (and "4, 6, 8, 20") (drums)	lb.	.26½	- .33
"P-75"	lb.	.66	- .72
"Pale 4" (and "1000") (drums)	lb.	——	- .17¼
Palm Oil	lb.	——	- .11
"Paradene Resins" (drums)	lb.	.05¼	- .06¼
"Para Flux" (drums)	gal.	——	- .19
"2016" (l.c.l.)	gal.	——	- .20
"Para Lube" (l.c.l.)	lb.	——	- .048
"Parmo"	lb.	.04½	- .12½
"Paroil 143"	lb.	——	- .09¾
"170, Powdered"	lb.	——	- .18
"Pentalene 90" (l.c.l., dms.)	lb.	——	- .17
"92" (l.c.l., drums)	lb.	——	- .25
"Pentaphen No. 114" (l.c.l., bags)	lb.	——	- .23
"Pepton 22"	lb.	.70	- .75
"PG-16" (drums)	lb.	——	- .34
"Picco 10" (and "25")	lb.	——	- .083
"75" (and "100")	lb.	——	- .09
"S.O.S."	gal.	.29	- .34
"Piccocizer 30"	lb.	.05½	- .06
"D"	lb.	——	- .10
"Piccolastic A" (and "B, C, D, E")	lb.	.20	- .20½
"F"	lb.	.12½	- .13
"Piccolyte S Resins"	lb.	.15	- .18½
"Piccoumaron Resins"	lb.	.04½	- .10¾
"Piccovar"	lb.	.10	- .12½
"Piccovol"	lb.	.02	- .02¾
"Pictar"	gal.	.18	- .23
"Plas-Blend 360"	lb.	.02½	- .03
"Plastac M"	lb.	.08¾	- .09¼
"Plasticizer No. 7-2"	lb.	——	- .60
"No. 11-2"	lb.	——	- .32
"Plasticizer No. 1889"	lb.	——	- .55
"No. 1919"	lb.	——	- .52
"No. 2069" (l.c.l.)	gal.	——	- .23
"No. 2070" (l.c.l.)	gal.	——	- .27
"Plasticizer SC"	lb.	——	- .50
"Plasticizer VA-1"	lb.	.33	- .35
"Plastoflex 50"	lb.	.28	- .29
"Plastogen"	lb.	.07¾	- .12
"Plastone"	lb.	.27	- .30
"Polymel Liquid"	gal.	.12	- .17
"Polymel Resins"	lb.	.02½	- .05½
"PT 101" ("400, 600, 800") (c.l., drums)	gal.	——	- .31
"Refrigerator Oil 145-R"	gal.	——	- 1.25
"Reogen"	lb.	.11½	- .15
"465 Resin" (drums)	lb.	——	- .03½
"Resin 733" (dlvd.)	lb.	.0768	- .0818[a]
"Resin C"	lb.	.015	- .016
"Resinex"	lb.	.01½	- .03
"Ridbo 369" (drums)	lb.	.08	- .09
"369-F" (drums)	lb.	——	- .12
"R.P.A. No. 2" (dlvd.)	lb.	——	- .65
"No. 3" (dlvd.)	lb.	——	- .46
"No. 4" (dlvd.)	lb.	——	- .80
"No. 5" (dlvd.)	lb.	——	- .57
"R.S.N. Flux"	gal.	.10	- .19
"R.S.O. Softening Oil"	lb.	.02½	- .03
"Rubtar"	gal.	——	- .40
"Santicizer B-16"	lb.	.32	- .36
"E-15"	lb.	.34	- .38
"M-17"	lb.	.35½	- .39
"No. 140"	lb.	.25	- .35½
"Softener No. 20"	gal.	——	- .18
"S.P.C."	lb.	——	- .19½
"S.R.O."	lb.	.02	- .02¼
"Stanolind Petrolatum" (l.c.l.)	lb.	.032	- .069
"Wax"	lb.	.25	- .30
"Staybelite Resin" (dlvd.)	lb.	.0768	- .0818[a]
"Sunny South" Pine Tar	gal.	.25	- .38½
"Superla Wax"	lb.	.23	- .28
"Syncera Wax"	lb.	.16	- .21
"Synplasticizer"	lb.	——	- .10
"Syn Tac" (c.l.)	gal.	——	- .33
"Synthol"	lb.	——	- .22½
Tar, Refined	gal.	.10	- .15
"K-Tarnel NR" (t.c.)	lb.	——	- .0851
"Terpene A"	gal.	——	- .65
"Thiokol TP-90 B" (and "TP-95")	lb.	.50	- .65
Triacetin	lb.	.34	- .45
Tricresyl Phosphate	lb.	.24	- .25½
Triphenyl Phosphate	lb.	.26	- .27
"Turgum S"	lb.	.07¾	- .09¼
"Vanadiset A" (to "F")	lb.	.0165	- .05
"Pulverized"	lb.	.08½	- .21
"Solution"	gal.	.40	- .65
"Vistac No. 1"	lb.	——	- .17½

PROCESSING AIDS

Castor Oil, Processed (dms.)	lb.	——	- .17½
Refined (drums)	lb.	——	- .15¾
"Castorwax" (min. 400 lbs.)	lb.	——	- .25
"Resin No. 510"	lb.	——	- .16

PROTECTIVE & STABILIZING AGENTS

"Agchem SA-9" (to "SA-12")	lb.	.65	- 1.02
"Aroostoocrat"	lb.	——	- .07½
Acacia	lb.	.12½	- .19
Carob Bean Flour	lb.	.45	- .60
Casein	lb.	.24	- .24¾
Ethylene Diamine 68%	lb.	.57	- .58
Karaya Gum	lb.	.19	- .45
Sodium Alginate	lb.	——	- 1.50
"Stablex B"	lb.	——	- .95
Starch, Corn, Processed	lb.	——	- .0795
Tragacanth	lb.	.30	- 1.00

RECLAIMING AGENTS

"1-D Heavy Oil" (drums)	lb.	——	- .04
"No. 517 High Boiling Oil"	gal.	.11½	- .16½
"C-6 Oil" (and "C-6-A, C-28")	gal.	.33	- .38
"C-10 Oil" (and "C-33")	gal.	.19	- .24
Caustic Soda—Flake 76% (c.l., drums)	cwt.	——	- 2.95
Liquid 50% (t.c.)	cwt.	——	- 1.95
Solid 76% (c.l., drums)	cwt.	——	- 2.30
Cresylic Acid	gal.	.75	- .83
"D-4"	gal.	.17	- .22
"E-5"	gal.	.15	- .20
"LX-83 Reclaiming Solvent"	gal.	.13	- .23
"LX-572 Reclaiming Oil"	gal.	.20	- .28
"Reclaiming Oil 1621" (l.c.l.)	lb.	——	- .0235
"Reclaiming Reagent No. 3"	lb.	.12	- .15
Soda Ash (c.l., bags)	cwt.	——	- 1.05
"Wilcor Reclaiming Oil No. 111" (drums)	gal.	.26	- .30
"No. 151" (drums)	gal.	.26	- .30
"X-1 Resinous Oil"	lb.	.011	- .016
"X-60 Solvent"	gal.	.20	- .28

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REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

"Atlantic HPC"	lb.	.05¼	.092
"Continental F"	lb.	.05¼	.092
"Croflex"	lb.	.05¼	.092
"Crow"	lb.	.05¼	.092
"Dixie Ordinary"	lb.	.05325	.097
"Dixiedensed" (and "S," "66")	lb.	.05¼	.092
"Huber HX"	lb.	.05¼	.092
"Kosmobile" (and "S," "66")	lb.	.05¼	.092
"Kosmos T"	lb.	.05¼	.092
"Spheron 4"	lb.	.05¼	.092
"Witco Disperso No. 6"	lb.	.05¼	.092

Channel, Medium Processing (MPC) (bags)

"Atlantic MPC"	lb.	.05¼	.092
"Colloidal Micronex" (dms.)	lb.	.06	.07
"Continental A"	lb.	.05¼	.092
"Croflex TH"	lb.	.05¼	.092
"Dixie R-1"	lb.	.05¼	.092
"Dixiedensed HM" (and "S-66")	lb.	.05¼	.092
"Huber TX"	lb.	.05¼	.092
"Kosmobile HM" (and "S-66, SMG"	lb.	.05¼	.092
"Kosmos M"	lb.	.05¼	.092
"Micronex Standard"	lb.	.05¼	.092
"Spheron 6"	lb.	.05¼	.092
"Witco Disperso No. 1"	lb.	.05¼	.092

Channel, Easy Processing (EPC) (bags)

"Atlantic EPC"	lb.	.05¼	.092
"Collocarb"	lb.	——	.065
"Continental AA"	lb.	.05¼	.092
"Croflex 77"	lb.	.05¼	.092
"Dixiedensed 77"	lb.	.05¼	.092
"Kosmobile 77"	lb.	.05¼	.092
"Micronex W-6"	lb.	.05¼	.092
"Spheron 9"	lb.	.05¼	.092
"Witco Disperso No. 12"	lb.	.05¼	.092
"Wyex"	lb.	.05¼	.092

Channel, Conductive (CC) (bags)

"Dixie 5" (and "B")	lb.	.05325	.097
"Kosmink"	lb.	.05325	.097
"Kosmos B"	lb.	.05325	.097
"Spheron C"	lb.	.05¼	.092
"Spheron I"	lb.	.05¼	.092
"Spheron N"	lb.	.15	.18½
"Voltex"	lb.	.10½	.14

Furnace, High Elongation (HEF) (bags)

"Sterling K"	lb.	.05	.07½

Furnace, High Modulus (HMF) (bags)

"Continex HMF"	lb.	.05	.07½
"Croflex 40"	lb.	.05	.07½
"Dixie 40"	lb.	.05	.07½
"Kosmos 40"	lb.	.05	.07½
"Modulex"	lb.	.05	.07½
"Philblack A"	lb.	.05	.06
"Statex 93"	lb.	.05	.06½
"Sterling L"	lb.	.05	.07½

Furnace, Semi-Reinforcing (SRF) (bags)

"Colloidal Black Dispersion 33" (drums)	lb.	.12¾	.13¾
"Continex SRF"	lb.	.03½	.05½
"Croflex 20"	lb.	.03½	.05½
"Dixie 20"	lb.	.03½	.05½
"Essex"	lb.	.03½	.05½
"Furnex"	lb.	.03½	.05½
"Gastex"	lb.	.03½	.06
"Kosmos 20"	lb.	.03½	.05½
"Pelletex"	lb.	.03½	.06
"Sterling R"	lb.	.03½	.06
"Sterling S"	lb.	.03½	.06

Furnace, Fine (FF) (bags)

"Statex B"	lb.	.05¼	.08½

Thermal, Fine (FT) (bags)

"P-33"	lb.	.04	.06½

Thermal, Medium (MT) (bags)

"Thermax"	lb.	.02¼	.05

REINFORCING AGENTS—OTHER

White

"Silical"	ton	65.00	85.00
"Witcarb R" (c.l.)	ton	——	32.50
"Witcarb R-12" (c.l.)	ton	——	100.00

Miscellaneous Reinforcing Agents

"Durez 12687" (and "12707")	lb.	.27½	.29
"Marbon B" (and "S-1, S-2")	lb.	.55	.65
"Marmix"	gal.	1.35	1.75
"Naftex SRF"	lb.	.04¾	.06½
"HMF"	lb.	.05¾	.07¾
"EPC"	lb.	.07	.09½
"Pliolite S-1"	lb.	.52	.55
"Synvarite RC Resins"	lb.	.27½	.29

RETARDERS

"E-S-E-N"	lb.	.34	.36
"Retarder W" (dlvd.)	lb.	——	.36
"Retardex" (tons)	lb.	——	.0445
"Thionex" (dlvd.)	lb.	——	1.25

RUBBER SUBSTITUTES

Mineral Rubber

"38"	ton	26.00	32.50
"Black Diamond"	ton	26.00	27.50
"Byerlyte"	ton	27.50	40.00
Gilsonite, Selects (c.l.)	ton	30.50	32.90
"Hard Hydrocarbon"	ton	25.00	27.00
Mineral Rubber, Granulated	ton	25.00	27.50
Solid	ton	20.00	22.50
"Parmr" (drums)	ton	25.00	29.00
"Pioneer"	ton	26.00	32.50

Vulcanized Vegetable Oils (Factice)

"Amberex"	lb.	.19	.20½
Brown	lb.	.10	.19
Dispersed	lb.	.17¼	.30¼
"Neophax"	lb.	.15½	.19
White	lb.	.09	.18½

Miscellaneous Rubber Substitutes

"Insulac W"	lb.	.05½	.06½
"Resin No. 1098" (drums)	lb.	——	.42
"No. 1198"	lb.	.31	.35
"Wilmex M-4" (and "M-6")	lb.	.05½	.06

SOLVENTS

Acetone (dlvd.)	lb.	.06	.07½
"American" Dipentene (t.c.)	gal.	——	.49
"Amsco" Lactol Spirits (t.c.)	gal.	——	.11½
"Rubber Solvent" (t.c.)	gal.	——	.11
"Solv A" (t.c.)	gal.	——	.18½
"Solv B" (t.c.)	gal.	——	.21½
"Special Napthalite" (t.c.)	gal.	——	.11
"Textile Spirits" (t.c.)	gal.	——	.11½
Amyl Chlorides, Mixed (l.c.l., drums)	lb.	——	.08
Benzol 90%	gal.	——	.21
Butyl Acetate (t.c.)	lb.	——	.18
Butyl Alcohol (t.c.)	lb.	——	.18½
Secondary (dlvd.)	lb.	.08½	.10
Tertiary (dlvd.)	lb.	.11	.13
Carbon Bisulfide, Tech.	lb.	.05¾	.08
Carbon Tetrachloride	gal.	——	.80
Cyclohexane	lb.	.11	.11½
Cyclohexanone	lb.	.30	.30½
Diacetone, Pure (dlvd.)	lb.	.10½	.12
Dichlorethyl Ether (drums)	lb.	.16	.17
Formal (drums)	lb.	.26	.27
Dichloropentane (l.c.l., drums)	lb.	——	.04½
"Dipentene 122"	gal.	.56	.58
Ethyl Alcohol (t.c.)	gal.	——	.55½
Ethylene Dichloride (drums, dlvd.)	lb.	.07½	.08
Heptanes (t.c.)	gal.	——	.15
Hexanes (t.c.)	gal.	——	.15¾
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.35	.44½
Ether, Ref. (dlvd.)	lb.	.04½	.06½
Mesityl Oxide (dlvd.)	lb.	.10½	.12
Methyl Acetone, Syn. (drums, dlvd.)	gal.	.46	.52
Methyl n-Amyl Ketone (drums)	lb.	.29	.30
Methyl Ethyl Ketone (dlvd.)	lb.	.08	.09½
Methyl Isobutyl Ketone (dlvd.)	lb.	.10½	.12
"N-5" Pentane Mix. (t.c.)	gal.	——	.06⅛
"N-6" Hexanes (t.c.)	gal.	——	.10¼
"N-7" Heptanes (t.c.)	gal.	——	.09½
"Nevsol"	gal.	.21½	.28
"Petrolene" (t.c.)	gal.	——	.08⅝
Picolines, Alpha, Refined	lb.	.23½	.24½
Mixed	lb.	.24	.25
Pyridine, Refined	lb.	.44	.45
Quinoline	lb.	.24½	.25½
"Rubsol" (t.c.)	gal.	——	.07⅛
"Skellysolve B" (Hexanes) (t.c.)	gal.	——	.10½
"C" (Heptanes) (t.c.)	gal.	——	.10
"E" (Octanes) (t.c.)	gal.	——	.129
"R" (Solvent Naphtha) (t.c.)	gal.	——	.071
"Solvenol"	gal.	.56	.58
Solvent, Crude, Light	gal.	.27	.30
"Sunny South" Dipentene (t.c.)	gal.	——	.49
"Tollac"	gal.	.23	.28
Toluene (drums)	gal.	——	.32
Trichlorethane	lb.	.11	.12
Triglycol Dichloride (drums)	lb.	——	.49
"Tromex"	lb.	.078	.083
"X-7" Sp. Heptanes (t.c.)	gal.	——	.09
Xylene (drums)	gal.	——	.31

STABILIZING AGENTS (for Vinyl Resins)

Lead Stearate	lb.	——	.30
"Stabilizer V-1-N"	lb.	.44	.50
"Vanstay"	lb.	.38	.50

SUN CHECKING AGENTS

"Antisol"	lb.	.23	.24
"Heliozone" (dlvd.)	lb.	.23	.24
"Sunproof"	lb.	.22¾	.23¾
"Jr."	lb.	.16¼	.17¼
"Tonox"	lb.	.50	.52

TACKIFIERS

"Advaresin 100"	lb.	.11	.11½
"Agchem RC 30"	gal.	.65	1.34
"Beckopol 1400"	lb.	.19½	.20½
"Bunaweld 780"	lb.	——	.22
"5514"	lb.	——	.30
"Dutrex 44"	lb.	——	.11
"E-310 Resin Emulsion"	lb.	——	.14
"Koresin"	lb.	.52	.55
"Liquid Rubber Flux"	lb.	——	.11
"Nevilloid C-55" (drums)	lb.	——	.12
"Pentacizer 344"	lb.	——	.20
"Pentalyn Resins" (dlvd.)	lb.	.14¼	.21
"Resin V"	lb.	——	.13¾
"Rubtack"	lb.	——	.10
"Staybelite Esters" (dlvd.)	lb.	.15	.23¾
"Super-Beckacite No. 1001"	lb.	.33	.34
"Synvarite RC-50"	lb.	——	.40

THICKENERS (FOR LATEX)

"Betanol" (drums)	lb.	——	.70
Propylene Laurate (drums)	lb.	——	.36
Sodium Silicate	lb.	.01	.02

VULCANIZING AGENTS

Selenium

"Vandex"	lb.	——	1.75

Sulfur

"Crystex" (l.c.l.)	lb.	.32	.35
"Dispersed Sulfur"	lb.	——	.09
"No. 2"	lb.	.08	.12
"Devil" (c.l.)	cwt.	——	1.35
"Insoluble Sulfur 60"	lb.	——	.16
"Star" (c.l.)	cwt.	——	1.85
"Tire" (c.l., dlvd.)	cwt.	——	2.05
"Tube" (c.l., dlvd.)	cwt.	——	2.40

Tellurium

"Latex Telloy"	lb.	——	1.75
"Telloy"	lb.	——	1.75

Miscellaneous Vulcanizing Agents

"VA-3"	lb.	.55	.65
"Vultac No. 1"	lb.	.38	.45
"No. 2"	lb.	.38	.45
"No. 3"	lb.	.42	.49

WASHING & FINISHING AGENTS

"Apcolene (t.c.)	gal.	——	.08½
"Washine"	gal.	.20	.30

WETTING AGENTS

"Advawet No. 15"	lb.	——	.15½
"No. 33"	lb.	——	.43
"Aerosol OT 70% Clear"	lb.	.80	1.00
"Agchem SA-15" ("16, 18")	lb.	.17	.29
"Aquarex BBX Conc." (dlvd.)	lb.	——	.70
"D" (dlvd.)	lb.	——	.60
"ME" (dlvd.)	lb.	——	.82
"NS" (dlvd.)	lb.	——	.75
"Areskap 50"	lb.	.18	.24
"Dry 100"	lb.	.39	.51
"Aresket 240"	lb.	.16	.22
"Dry 300"	lb.	.42	.50
"Aresklene 375"	lb.	.35	.50
"Dry 400"	lb.	.51	.65
"Santomerse D"	lb.	.11	.25
"S"	lb.	.41	.65
"Stablex G"	lb.	——	.70
"Yelkin C"	lb.	——	.55
"TT"	lb.	.25	.35½

MISCELLANEOUS CHEMICALS

"Acto 450" ("550-W," "600," "630")	lb.	.09¾	.11½
"Agchem SA-17"	lb.	——	.29
"Aquarex SMO" (dlvd.)	lb.	——	.40
"A.S.T.M. Oil No. 1"	gal.	1.00	1.15
2-Ethylhexanol (dms., dlvd.)	lb.	.25	.26
Glycerine, 88% Sap., Crude (dlvd.)	lb.	.14	.14½
"Hydrozo"	lb.	——	.51
"MODX" (tons)	lb.	——	.29½
"Para Resin No. 1784"	lb.	——	.09¾
"No. 2457"	lb.	——	.04
"No. 2718"	lb.	——	.04
"Reference Fluid SR-6"	gal.	.85	1.00
"SR-10"	gal.	.60	.75
"Resin No. 1226"	lb.	.31½	.36½
Resorcinol (dlvd.)	lb.	——	.64
"Rio Resin"	lb.	.36	.38
"Santocel"	lb.	——	.50
"Sublac"	lb.	.25	.27
"Synpep N" (drums)	lb.	——	.54
"Tysonite"	lb.	.16½	.17¼
"Vinsol Resin"—Lumps (dlvd.)	lb.	.02½	.03 a
Pulverized (dlvd.)	lb.	.02½	.03½ a

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TECHNOLOGIST versed equally well in Petroleum and Rubber wants position which is largely administrative, supervisory, or technical sales. Bachelor and Master of Arts in Petroleum Engineering, plus two years toward Doctorate in Organic Chemistry; Five years teaching in Universities; Eleven years research chemist and technical Superintendent Petroleum refineries; Excellent record, nine years as Principal Engineer (Rubber) for Navy Department, member Phi Lambda Upsilon, Sigma Xi, thirty-four publications (rubber), fourteen Patents (Petroleum and Rubber); Protestant, Age forty-six, married, Salary six to eight thousand, depending on circumstances and location. Address Box 2111, RUBBER AGE.

M.I.T. GRADUATE desires position as superintendent of small rubber factory. Long technical rubber experience; some experience in plastics; short experience as assistant to the superintendent; production work greatly preferred. Recent courses taken in production technique. Address Box 2139, RUBBER AGE.

FOREMAN, 20 years' experience; mixing, milling, extruding, calendering; molded and mechanical goods, footwear, etc.; crude and synthetic rubber, also plastics. Address Box 2143, RUBBER AGE.

YOUNG MAN. Have several years of all-around experience in abrasive products and hard rubber. Plus knowledge of varied mechanical goods equipment. Interested in production, engineering, and development. Reasonable salary. Open to offers. Address Box 2144, RUBBER AGE.

CHEMIST, recent graduate. Took Qualitative, Quantitative, Physical Chemistry, Organic Chemistry, Qualitative Organic, Calculus. Has industrial Chemistry experience. Has good knowledge of plastics. Able to operate laboratory molding presses. Desires work in Plastics or Rubber, or other chemical field. Seeking a good "break." Lives in east but will travel. Address Box 2157, RUBBER AGE.

CHEMICAL ENGINEER B.S. Four years' experience in compounding, processing, and polymerization of synthetic rubber desires position of responsibility where knowledge and experience will be useful. Address Box 2160, RUBBER AGE.

HELP WANTED

CHEMIST with some compounding experience on soles and heels. Permanent position with large nationally known company. Outstanding opportunities for advancement. State age, education, experience, including previous and present employment, and starting salary desired. Address Box 2034, RUBBER AGE.

TIRE AND TUBE DEVELOPMENT AND CONSTRUCTION ENGINEERS—Excellent opportunity in progressive Eastern company. Unlimited opportunity for advancement. Salary commensurate with ability. Address Box 2091, RUBBER AGE.

CHIEF CHEMIST. Permanent position is offered by independent West Coast rubber manufacturer established for 20 years. Requisites are wide compounding and processing experiences in synthetic and crude rubbers and ability to supervise a staff of assistants in well-equipped Laboratory. Replies solicited only from those able to assume complete responsibility for all technical manufacturing problems. Salary offered is commensurate with responsibilities. Write giving age, complete qualifications and experience. Address Box 2114, RUBBER AGE.

SUPERINTENDENT for nationally known sole and heel manufacturing company. Unusual opportunity for right man. State age, education, where employed during past ten years and where employed at present, also starting salary desired. Address Box 2035, RUBBER AGE.

TIRE CURING FOREMAN—Must have experience and capability in supervising tire production. Permanent position with attractive salary for man with resourcefulness and ability. Eastern concern. Specify all qualifications first letter. Address Box 2092, RUBBER AGE.

EXPERIENCED CALENDER OPERATORS, also embossing calender and Sheridan Press operators. Advancements for the right men. State your qualifications in your first letter. Confidential. Address Box 2129, RUBBER AGE.

HELP WANTED (Continued)

DEVELOPMENT CHEMIST, young, with several years' experience in rubber industry for development work on synthetic rubbers, adhesives, plastics used in fabric coatings. Excellent opportunity, Metropolitan New York area. In reply give complete resume and minimum salary requirements. Enclose small photo. Address Box 2146, RUBBER AGE.

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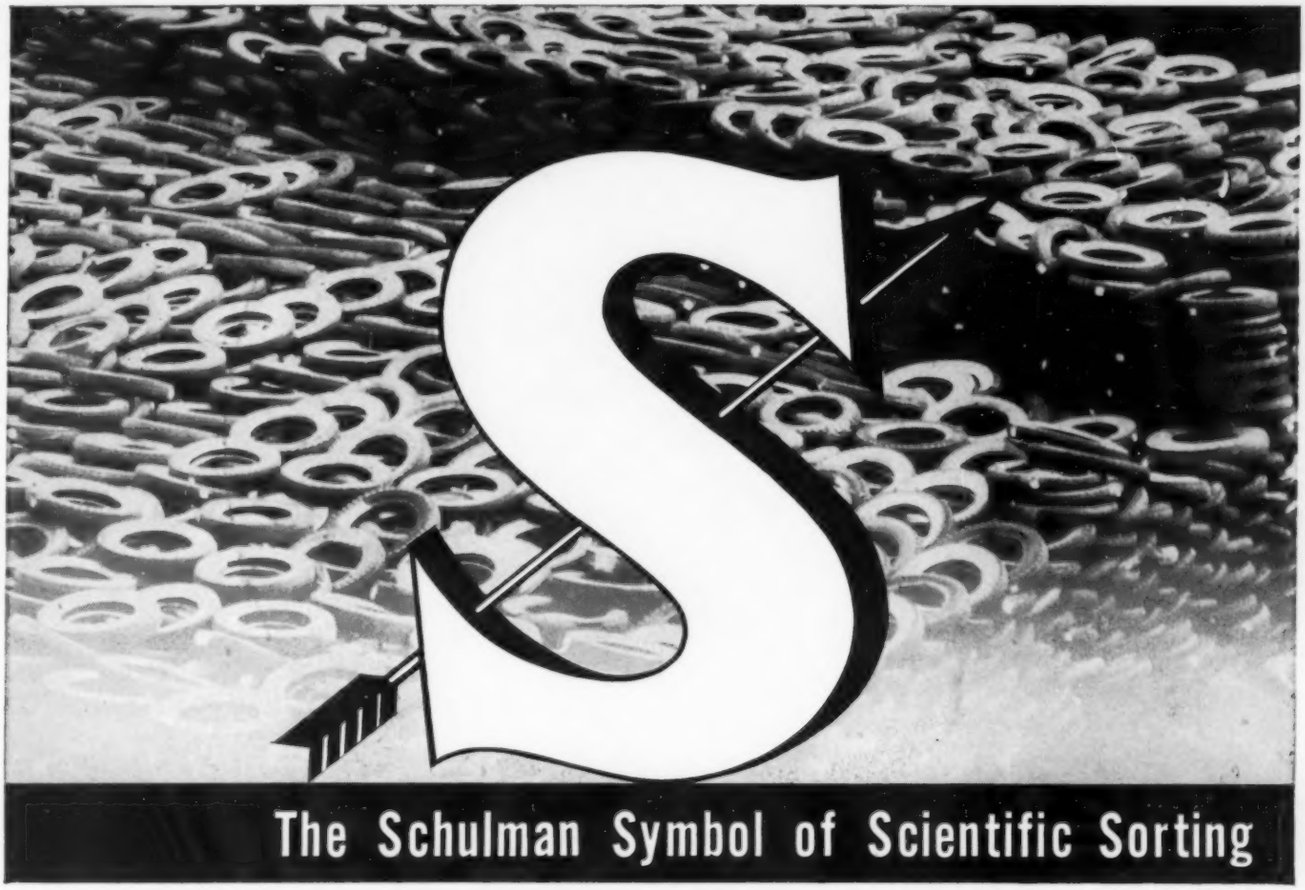

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